Smithsonian

January 1982

Roosevelt remembered:
FDR, 18, as a senior
at Groton (p. 38)

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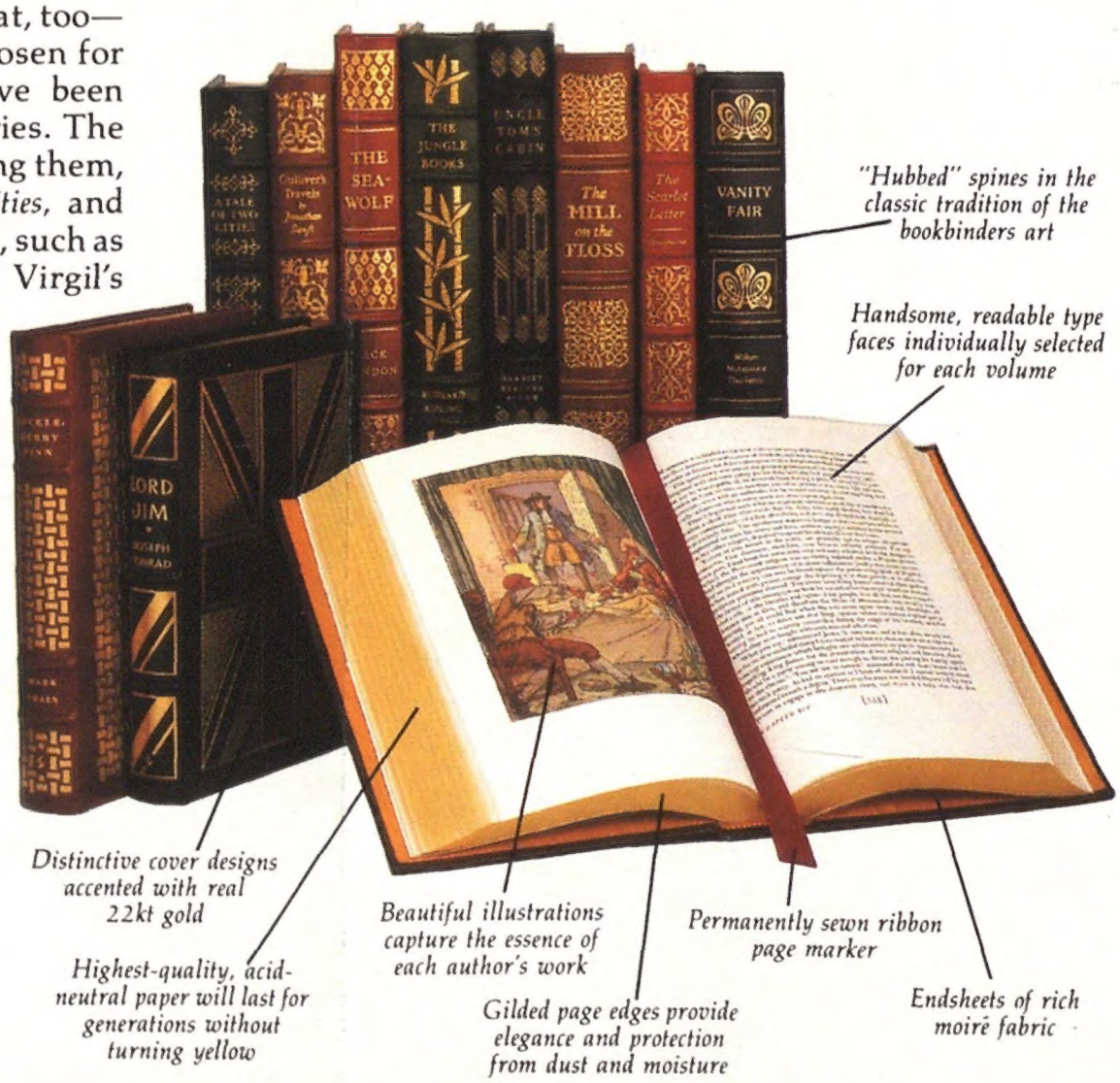
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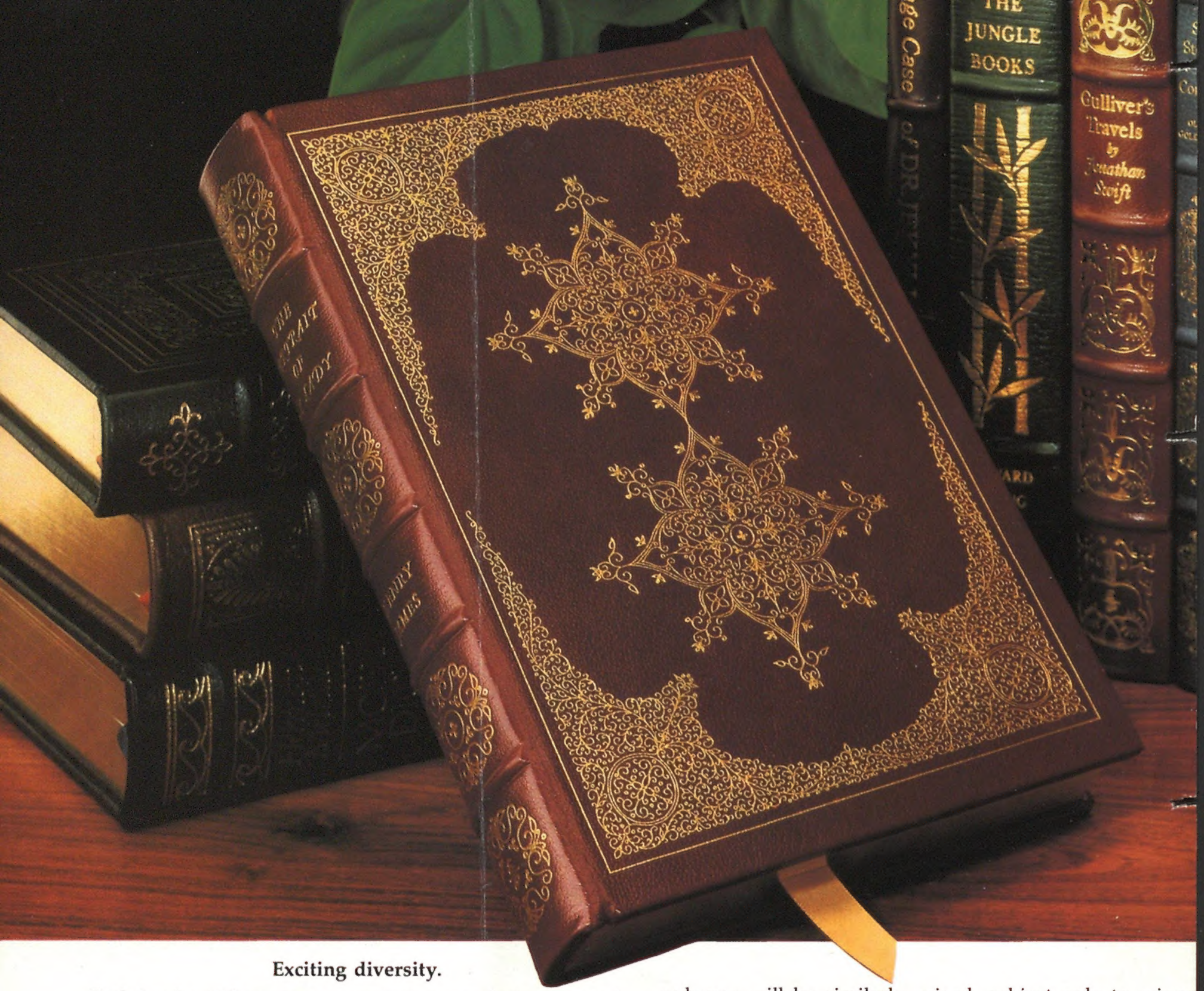

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January 1982

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Volume 12, Number 10

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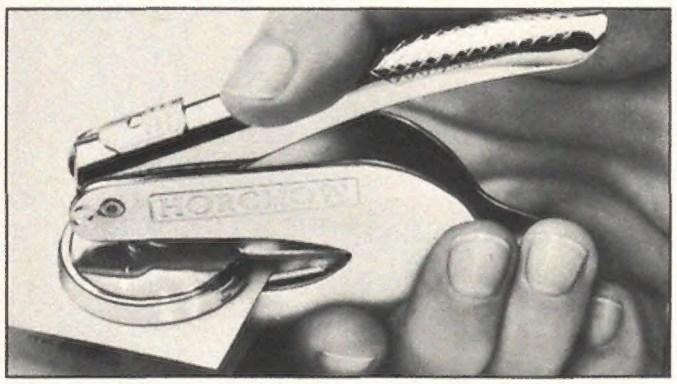

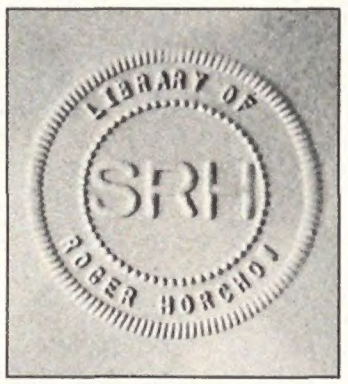

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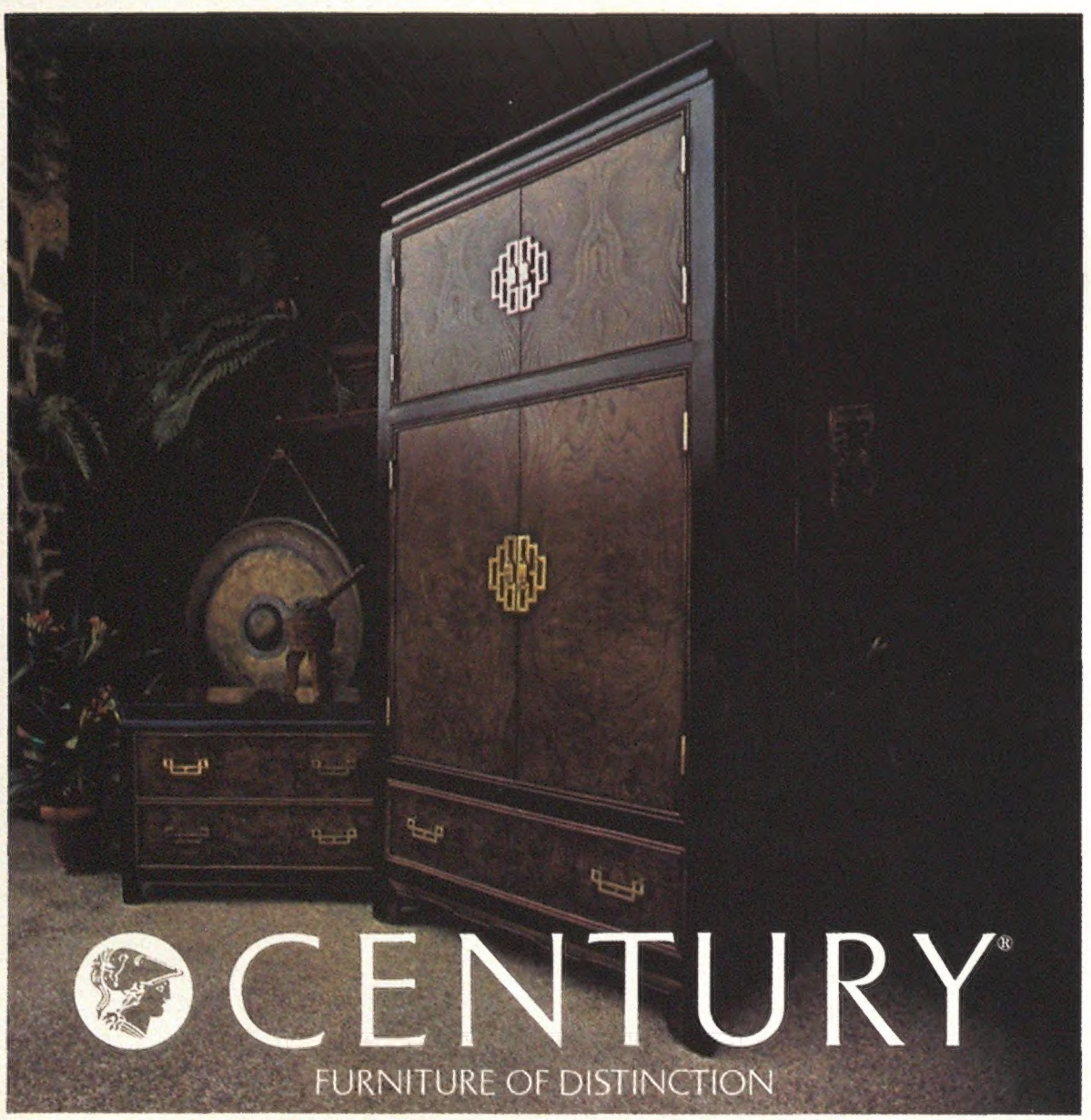

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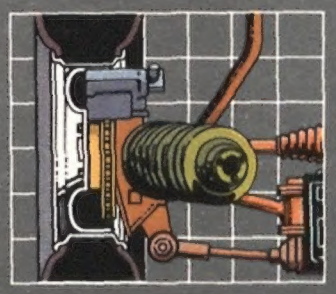

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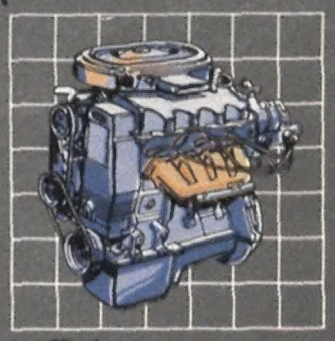

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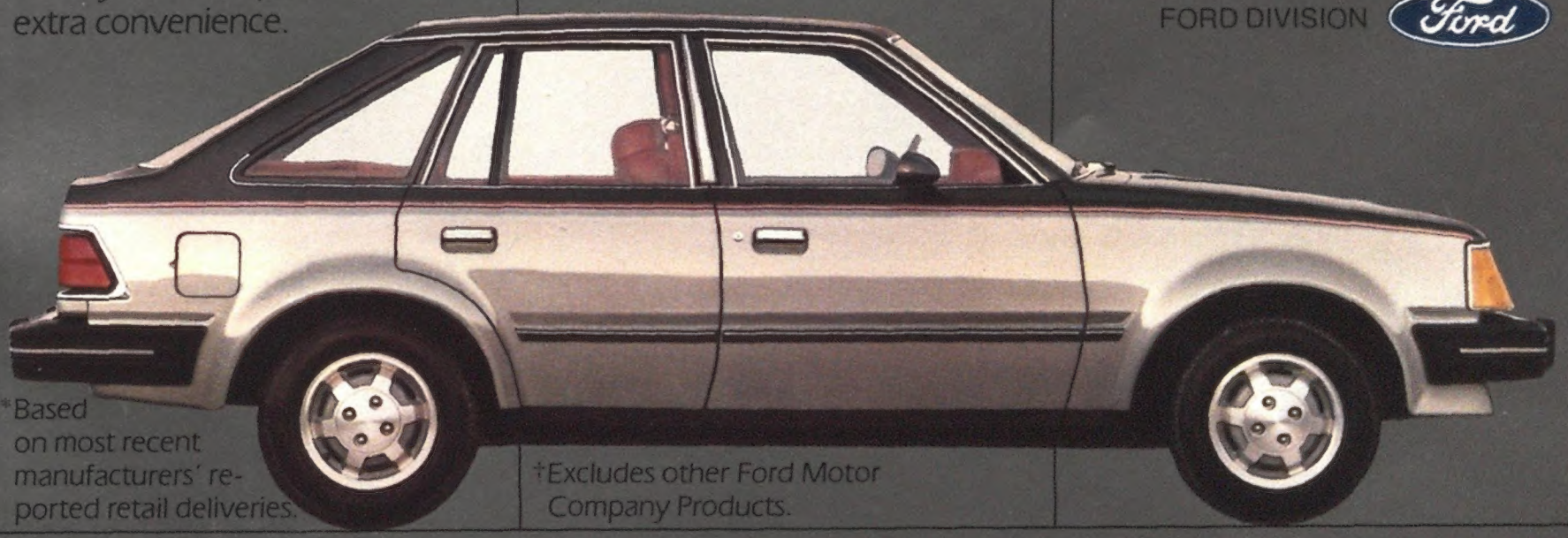

*Based on most recent manufacturers' reported retail deliveries.

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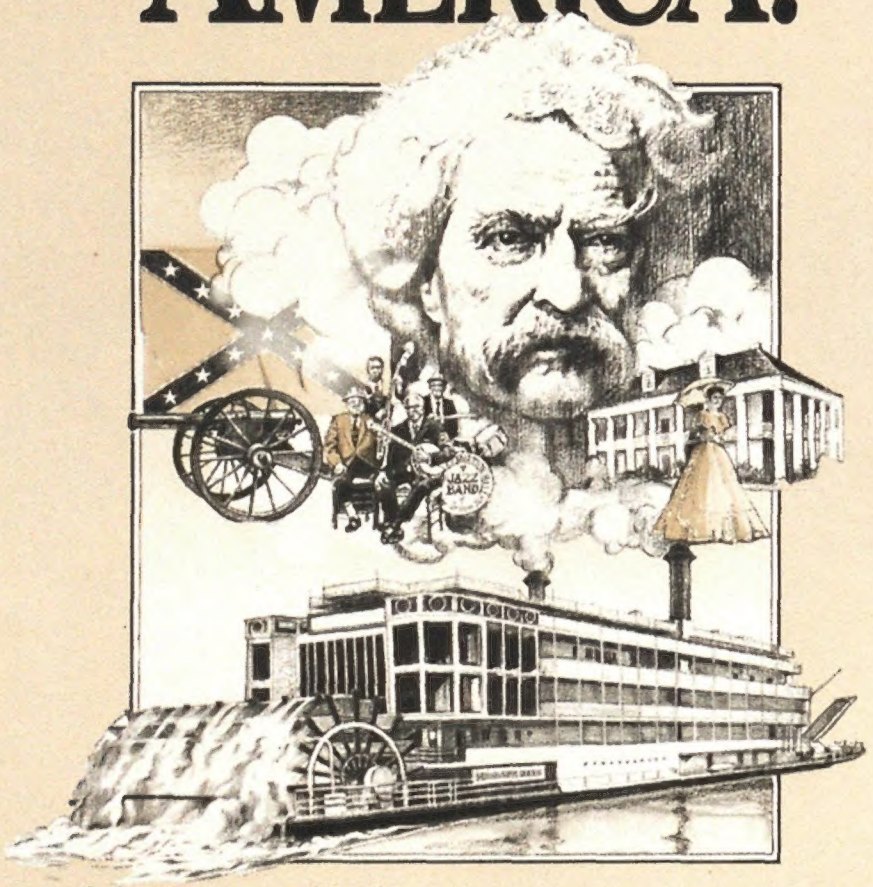

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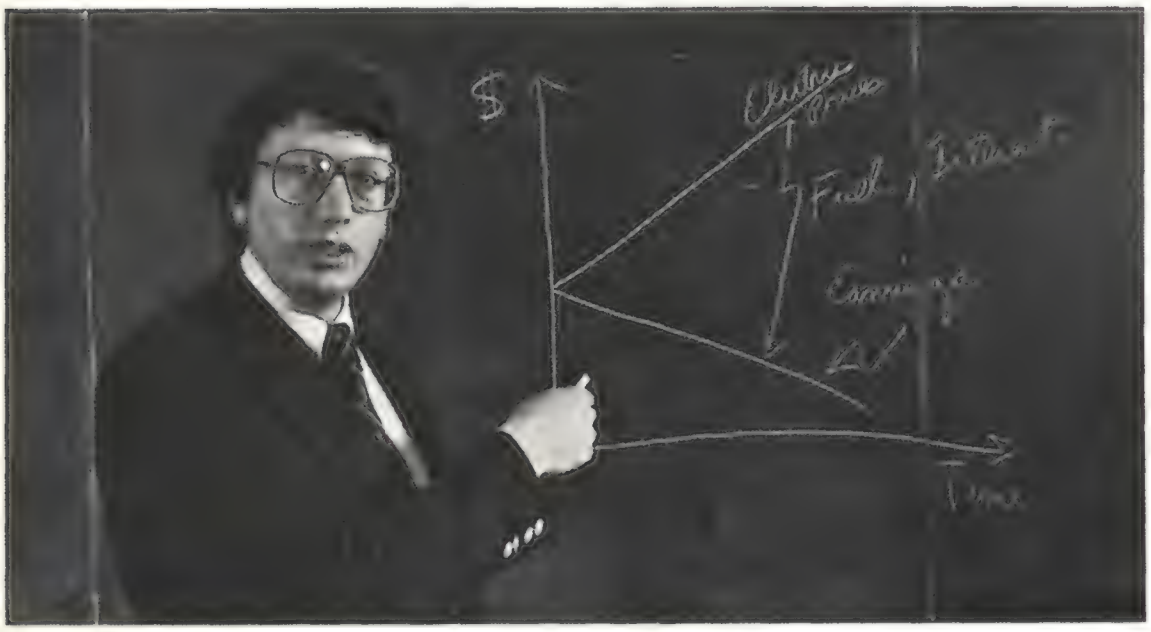
A message from one of the nation's leading authorities on utility regulation.

IT'S TIME TO BRING
ENERGY PROBLEM

By Charles J. Cicchetti
Former Chairman, Wisconsin Public Service Commission



Charles J. Cicchetti was formerly Director of the Wisconsin Energy Office and Chairman of the Wisconsin Public Service Commission. In 1980 he resumed his position as Professor of Economics and Environmental Studies at the University of Wisconsin-Madison. He is also a partner in the Madison Consulting Group.

Professor Cicchetti served with Resources for the Future in Washington, D.C. from 1969 to 1972. He has served as a consultant on electricity, natural gas, telephone and postal pricing and on oil and conservation policy, and has appeared as an expert witness before many state and federal agencies. He is a frequent contributor to journals devoted to economics and energy and has co-authored several books on energy policy.

This country's "energy delivery system" — its investor-owned electric utility industry — is in trouble, and a dramatic change in state regulatory policies is needed urgently nationwide.

This is one of a series of messages about the investor-owned electric utility industry — the system that delivers 77% of the nation's electricity. Sponsor of the series is the Edison Electric Institute, representing some 200 investor-owned electric utilities. The self-interest of the individual companies in this series is obvious, but we believe there is a broader public interest at stake.

We have therefore asked prominent authorities outside the electric utility industry to present their views. They are not paid for these messages, but set them forth because they believe these are issues that should be understood more widely and acted upon. The Edison Electric Institute welcomes your views and comments.

As one concerned about energy problems, increasingly I am disturbed that a major part of our nation's energy supply system — the investor-owned electric utility industry — has a pressing need for relief. Moreover, very few people apparently are aware of this critical situation.

I have seen all sides of the energy issue: as an intervenor for consumers and environmentalists, a state utility regulator, and now a university professor of economics and consultant on energy problems. During the past ten years, I have watched the electric utilities go from blue-chip investments to companies beset with financial difficulties. As a nation we face disastrous deterioration of our industrial strength and our living standards — unless this trend is reversed.

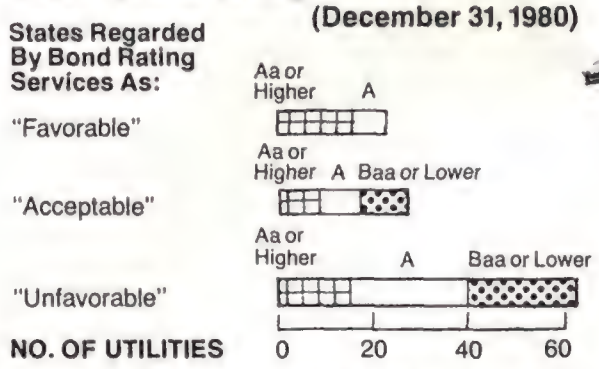
The ultimate losers will be: (1) consumers who will pay even higher prices; (2) taxpayers who will pay more as industry moves away to other states or foreign countries; and (3) people facing unemployment in a shrinking economy. In short, all of us.

Consider the following financial and political problems:

- Electric utilities have become political scapegoats.
- Rates of return have been kept so low that stockholders are often subsidizing consumers.
- Modernization or replacement of aging plants, many fueled by costly petroleum products, has become prohibitively expensive.
- Electric utilities have been forced to retrench to such an extent that some are even encouraging large customers to disconnect.

Relationship of Regulatory Climate To Utility Bond Ratings

(December 31, 1980)



"Enlightened regulation is the key to the future. It is imperative that all regulators respond realistically to present needs and respond quickly."

All of this has resulted largely from restrictive regulatory policies and pro-

Edison Electric Institute

AMERICA'S HIDDEN INTO THE OPEN

cedures. These have prevented many power companies from earning sufficient returns to attract capital needed to sustain their vital role in the national economy. Unless action is taken, the future may well include power rationing, blackouts and brownouts.

Ironically, electric bills today are probably higher than they should be because of regulators' well-intentioned attempts to keep rates artificially low. To compensate in part for increased fuel costs and record interest rates, regulators have held down utility earnings. Earnings are required to compensate stockholders for their investment, to assure bondholders of the safety of their capital, and for reinvestment in the company. As a result of reduced earnings, the credit ratings of electric utilities have weakened, and interest burdens have increased. Conversion to other, less expensive fuels has become more difficult and costly.

Regulatory practices that would enable utilities to earn a *fair* return would not mean a return to the expansionist philosophy of the early 1970s. Nor would they mean a huge jump in consumers' electric bills.

Consider that, if on an industry-wide basis, utility return on stockholder equity were increased from 12% to 18% (some fifty percent additional income) overall consumer bills would increase by less than five percent. With acceptable returns utilities could make those sound investments which ultimately would result in lower electricity costs. Examples include investments in conversion from oil to coal, nuclear and other fuels; in transmission and distribution grid maintenance; in interconnection improvement; and in meeting new local growth requirements.

Electric Utility Senior
Debt Rating Changes by Moody's
1971-1981

Year	Number of Ratings Lowered	Increased
1971	3	1
1972	3	1
1973	2	3
1974	25	1
1975	15	2
1976	9	0
1977	2	3
1978	4	1
1979	6	3
1980	13	1
1981 (August 31)	4	1

Source: White Weld & Co., Salomon Brothers

"Downgrading of utility creditworthiness has been epidemic. In the last four years more than three times as many issues have been downgraded as were upgraded."

Merely to provide adequate new plants and equipment for the rest of this decade, utilities will have to spend an estimated $365,000,000,000 — that's billions of dollars. At least 20% of this will require more stock to be sold.

That simply can't happen under current conditions!

Today, the actual rate of return on equity achieved by utilities, on average, is well below that offered by other, less risky investments.

Electric utility stocks are selling at approximately 20% below average book value and, when new shares are sold below book, new stock issues actually confiscate the capital of existing stockholders. Financial rating services now regard electric utility bonds as very risky and the utility companies must therefore pay higher interest rates.

While average rate of return on equity allowed by state utility regulators so far in 1981 has edged up to about 15%, their actual case-by-case rate decisions and delays have not permitted utilities to earn much more than 11%. This rate is too low. It is often less than the inflation rate, and the interest on utility bonds, which is now about 17%.

Downgrading of utility creditworthiness has been epidemic. In the last four years, more than three times as many companies have been downgraded as were upgraded. Some securities are rated so low that certain institutions, by law, may not purchase them.

Where $1 Of Revenue Went — Electric Operations	1973	1980
Fuel	23¢	37¢
Taxes	16	12
Materials, supplies, others	12	11
Salaries and wages	12	11
Depreciation and amortization	10	7
Interest and preferred dividends	14	13
Dividends to common stockholders	8	7
Retained in business	5	2
Total	$1.00	$1.00

"To compensate in part for increased fuel costs and record interest rates, regulators have held down utility earnings."

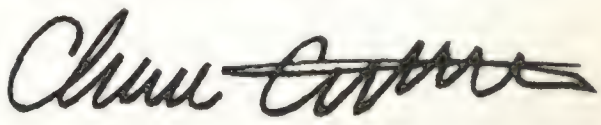
As a result of many state utility commissions following the path of least resistance, the utility industry has been denied the rates of return that are necessary to build new plants that will either lower prices or supply necessary energy. Such proposed plants are being postponed indefinitely. Thus, we have arrived at the moment of truth.

In those states with a reasonable regulatory environment, there are signs of resurgence of utility health. Where political expediency has supplanted economic reality as the basis for rate decisions, the situation is critical. What has to be done?

1. **Regulatory commissions should follow the lead of those states that are now permitting an adequate rate of return on equity — "adequate" meaning at least 17%, and perhaps 19% or more, based on real earnings, not accounting devices.**
2. **Commissions should expedite rate proceedings, reduce regulatory lag, and allow interim rates, so that inordinate delays do not invalidate decisions by the time they are handed down.**
3. **Commissions should permit automatic rate adjustments for inflation, higher wage costs, higher capital costs and other factors that are beyond the control of utility management.**
4. **Commissions should grant rapid increases for major expenditures such as new equipment or new plants and permit cost recovery during construction.**
5. **Commissions should be careful to reward, not unintentionally penalize, innovative ratemaking, conservation, productivity increases and other constructive actions.**

I don't think it is overly melodramatic to characterize this moment as one of great opportunity or great peril for state utility regulation. Present consumer anger over prices will seem mild when compared with general public anger if electric power shortages are allowed to develop in the future. Enlightened regulation is the key to the future. It is imperative that all regulators respond realistically to present needs and respond quickly.

The electric utility system is the core of this nation's industrial strength and social fabric. It is time that thoughtful people throughout the country realize the national stake in the system's health and strength. Procrastination will be more costly, and many good options will be lost. If political expedience and inertia continue to rule the day, the ratepayer and the nation will be worse off.



Charles J. Cicchetti

The association of electric companies
1111 19th Street, N.W., Room 716, Washington, D.C. 20036

Secretary Ripley's comments

The view from the castle

As long ago as 1868, this Institution was known for contributions to science and for bringing together the old and new worlds

In the new year, the Smithsonian is heartened to think that citizens of this Republic recognize that the Institution belongs to them, to all of them and, therefore, to all the world. As our founder, James Smithson, intended, the Institution continues to be an active, living organization, known with favor in every part of the world, having "made contributions to almost every branch of science, and brought more than ever before into intimate and friendly relations the old and new worlds."

That quotation is from an 1868 letter from the Board of Regents of the Institution to the Congress of the United States—signed by the Chancellor, Salmon P. Chase, and the Secretary, Joseph Henry—asking for a small increase in the annual budget for public instruction and a sum for renovation of the building for public viewing.

The letter was recently rediscovered and sent over to the Smithsonian by the Chairman of the House Appropriations Subcommittee on Interior and Related Agencies, the Honorable Sidney R. Yates. In these days of confusion, of hurly-burly, of lack of time for reflection, of blurred vision, it is helpful to reflect on larger issues which transcend today's news, which cannot be comprehended by brush-fire reactions. There is a reason for the solidity of certain institutions: a current of purpose that runs deep, reassuring us and on occasion reminding us of tradition, of stability.

It is the citizens of the United States who own the Smithsonian and love it, not some vague, impersonal agency or bureau of the government. It is administered for all mankind as a memory bank, a trust against the future, to remind all of us what the strange aggregation of peoples in this vast land stands for, and, in reminding, to evoke the "increase & diffusion of Knowledge" continually.

No doubt the Committee on Appropriations of 1868 heard the Smithsonian's solemn plea: "The Board of Regents are confident that upon a full consideration of the case, your honorable body will grant an adequate support for the collections of the government, and also an appropriation for finishing the repairs of the building, and eventually, when the financial condition of the country will permit, for the independent maintenance of a national museum."

The money requested was certainly not very much, considering the invaluable work on exploring surveys across the Western parts of the country which the Smithsonian had already sponsored, and considering also the unparalleled gifts of books from around the world—some 40,000 of them—already transferred to the Library of Congress at the suggestion of Secretary Henry. Even so, the benefits to the nation of the research and gifts to the Smithsonian could not be measured in terms of money.

Could it be said that 114 years later this Institution has given in fair measure for value received? Is it possible to equate what the Smithsonian has shared with the people in dollars? I believe that it is impossible, for it has been done freely with no thought of gain. And it has been done for *everybody*. Thank you, Mr. Chairman, for reminding us of our services to Americans, and to all mankind.

S. Dillon Ripley

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Letters to the Editor

Prominent among the large dogs favored by 19th-century Englishmen was the black Newfoundland. However, thanks to Queen Victoria and Landseer, parti-coloreds became popular. Coached by the artist, Her Majesty painted her own black-and-white Newfoundland. Landseer, remembering fondly a black-and-white dog he had had as a boy, added white markings to many black Newfoundland portraits he was commissioned to paint. Ed.

Edwin Landseer

Dear Sir: I thoroughly enjoyed your November article on Landseer's memorable animals. One that clearly celebrates the artist in this country, yet was not mentioned, is the Newfoundland. In addition to the solid colors most commonly found, a black-and-white strain is bred, raised and shown. It is known as the "Landseer," owing to the lovely paintings that Edwin Landseer produced with this noble giant as hero [see below].

Judie Aitken
Indianapolis

Dear Sir: Landseer's paintings of dogs are exemplary portraits, conveying the individual's character and personality, as well as lifelike appearance. Among his canine sitters were Newfoundlands, a breed much in vogue in the 19th century. They won renown with heroic rescues of potential drowning victims—their large, webbed feet and heavy, water-resistant coats make them hardy swimmers in iciest waters.

When Lord Byron's beloved Boatswain died, the 20-year-old poet placed a monument in his garden at Newstead Abbey and had carved on it his poem, *Inscription on the Monument of a Newfoundland Dog*, preceded by the following:

Near this spot
Are deposited the Remains of one
Who possessed Beauty without Vanity,
Strength without Insolence,
Courage without Ferocity,

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Landseer painted *Bashaw, the Property of the Right Honorable Earl of Dudley* (also called *Off to the Rescue*) in 1827, did engravings after it years later.

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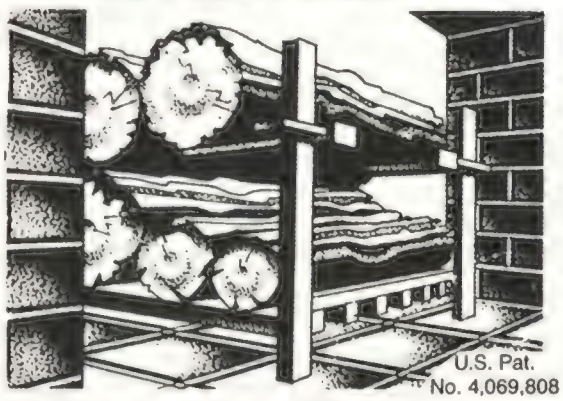

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For full scientific description, see L. Cranberg, Am. Jour. Physics, June '81. Reprints on request.

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Is but a just tribute to the Memory of
BOATSWAIN, a Dog,
Who was born at Newfoundland, May 1803
And died at Newstead, Nov. 18, 1808

The poem, which extolls a dog's worth over that of Man, concludes with the couplet: "To mark a Friend's remains these stones arise,/ I never knew but one, and here he lies."

David Bourdon
New York City

Byron's 1811 will directed that he be buried in a vault in the garden near his faithful Boatswain. But he sold the estate in 1818, and his remains are interred in an ancestral vault at nearby Hucknall Torkard Church. Boatswain's monument is still in the garden at Newstead. Ed.

Greek bronzes

Dear Sir: The article on the Riace bronzes is just what was needed at this time—an account of the finding of the statues and a factual description. Speculation about attribution, exact dating and provenance should await careful study by the experts. In the meantime you have made these great works accessible to be enjoyed by a wide public.

Homer A. Thompson
The Institute for Advanced Study
Princeton, New Jersey

Publication of learned opinions on the bronzes' technical, historical and artistic aspects, in Italian Ministry of Culture's Bollettino d'Arte, *is expected in a few months; the search will continue.* Ed.

Sister Kenny

Dear Sir: I agree with Victor Cohn's article stating that Sister Kenny was a woman history should remember and yet has almost forgotten. Like the author, I had almost forgotten her, although I was greatly inspired by her in the Thirties and Forties and participated in the national acclamation of her. But no one can read this article and continue the sin of forgetting Sister Kenny.

Karl Menninger, M.D., F.A.P.A.
Topeka

Dear Sir: Sister Kenny blazed a trail across previously uncharted therapeutic terrain. She refused to accept the worthless results of approved methods and pio-

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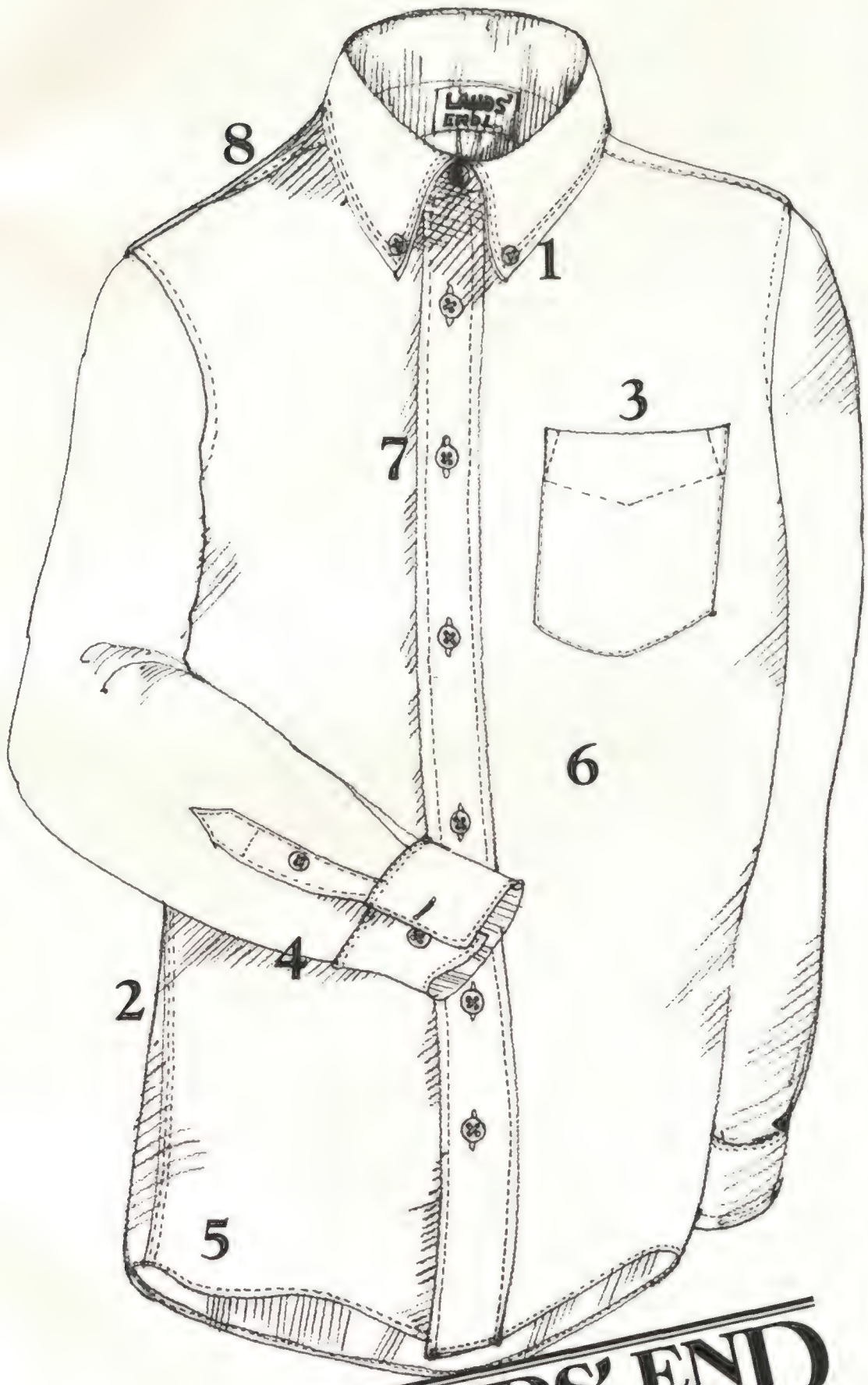

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Shelley Simonds Walker, R.N.
Des Moines

Battle of the North Atlantic

Dear Sir: The beautiful and bitter scenes of World War II at sea gave me a shock when I saw "my" ship, the *Reuben James,* in her last moments—115 of her gallant crew of 159 lost. I was just out of high school in Staten Island, New York, when I joined up, and was aboard when she returned from her last peacetime cruise.

She was one of the old four-stackers. Torpedo tubes port and starboard provided shelter from a hot sun as we would stretch out on the freshly scrubbed deck beneath them, relaxing during a free moment. A beautifully spacious midsection served as the mess hall. We used to swing down across the ladder and drop to the deck without descending formally. To the side was a large bronze plaque showing the heroic boatswain's mate, Reuben James, credited with saving the life of Lieutenant—later Commodore—Stephen Decatur during the Barbary Wars.

I was supposed to have been on that ship when it left Tompkinsville, Staten Island, but I had been counseled to go to college, which I did. I was called up soon enough and shipped out on a new 2,200-ton destroyer; I didn't hear about the fate of the *Reuben James* until much later.
Vladimir d'Algin
Santa Monica

Dear Sir: Your article failed to note the presence of U.S. Coast Guard cutters on international ice patrol and on weather station, hoping their "peacetime white" ships would be recognized as neutral as they patrolled the North Atlantic sea-lanes before our involvement in the war. Immediately upon Lend-Lease passage, the British received ten of these cutters, transformed into combat-ready ships. As an Apprentice Seaman aboard one of these cutters I saw the complete overhaul from December 1940 to February 1941.

By early 1941 our crews were scattered to become the cadre of later crews for the early-attack troop transports as well as numerous LCIs, LSTs and newer escort

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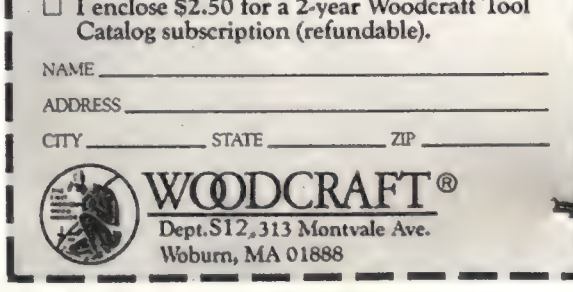

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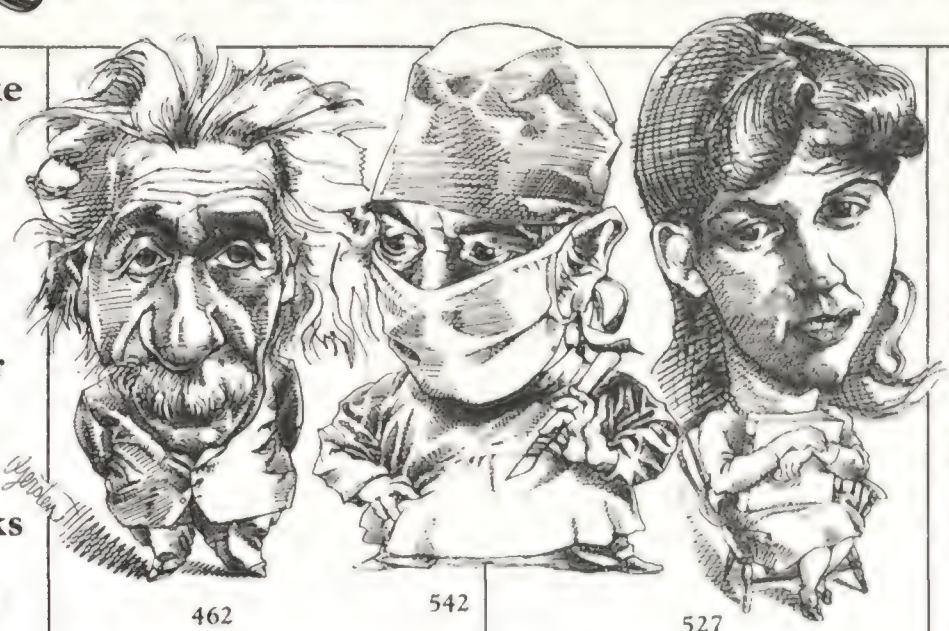

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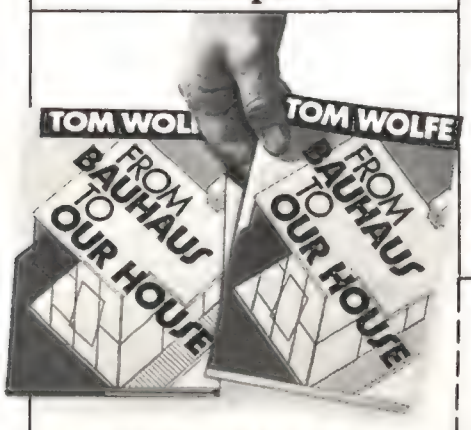

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Medicinal plants

Dear Sir: The first scientific description of a herbal medicine, digitalis, appeared almost 200 years ago. William Withering's 1785 classic, *An Account of the Foxglove, and Some of its Medical Uses,* describes the British botanist's treatment of 183 patients with leaves from the plant *Digitalis purpurea.* It should be noted that his perceptive observations date to the very beginning of clinical research.
David Scott, M.D.
Minneapolis

Atlantic salmon

Dear Sir: Ted Williams' story brought back memories of 60-odd years ago. I was born and raised at Ship Harbor Lake, 40 miles east of Halifax, Nova Scotia, and three miles from the Atlantic Ocean. My father was a county constable, fish and game warden, postmaster and a courier responsible for delivering the mail to five other post offices.

The salmon swam up Lower Ship Harbor through a chain of three lakes and falls to Ship Harbor Lake, one of the largest bodies of fresh water in Nova Scotia, 12 miles long and about one-and-one-half miles wide, then all the way up the lake to the spawning grounds at Indian Head. They started in June and anyone who hooked a seven to ten pound salmon would call people he knew who wanted to catch salmon. By law, only salmon seven pounds or more were legal. A Silver Doctor fly or a live two-inch minnow was used; the salmon could not be trapped.
R. L. Webber sr.
Orlando, Florida

Who's Who

Dear Sir: The following development in *Who's Who*'s history afforded this biographee a degree of amusement:

In preparation for WWA's 1974-75 edition probably all biographees, certainly this one, received a request to post back to the editors his or her "Thoughts On

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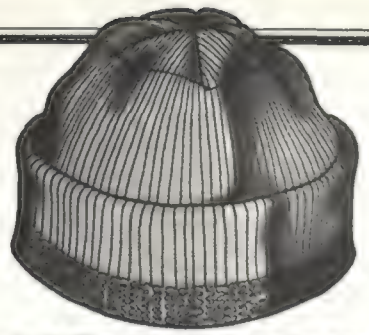

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My Life" for possible selection for publication. The editors sought "those principles, ideas, goals and standards of conduct" that had "helped you achieve your present success in your career and as a person highly regarded by others." It was too tempting to resist and, firmly emplanting my tongue in my cheek, I let them have it. The bait took. My name, followed by my simple formula for success, appeared in the 38th edition:

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Alfred L. Wolf
Blue Bell, Pennsylvania

Marco the Magi

Dear Sir: Someone should put a flower under the windshield wiper of Nathan Cobb's car for his wonderful article on *Le Grand David* magic show. Yet words alone can't convey its joy and grandeur. Beverly, Massachusetts, is to magicians what Beverly Sills is to music. You can write about Miss Sills' voice, but you really have to hear it.

Cesareo Pelaez and his merry band of bafflers have accomplished something that hasn't been done in this country in almost a century—a resident magic company. In the days of Heller, Herrmann and Kellar there was no competition from movies, radio, TV. Harry Kellar lasted the longest, some 320 performances in Philadelphia. The Beverly troupe has given twice as many performances already.
Robert Lund, Curator
American Museum of Magic
Marshall, Michigan

VROOM!

Dear Sir: Richard L. Williams' account of the good old days of motor cars really brought back a lot of memories. Like when I first got involved in a long series of jalopies—a $13.50, 1913 Ford touring car (yes, brass radiator). My sidekick, Louie, told his family it belonged to me and I told my family it was Louie's. We got away with that all one summer. Later we had Model Ts, 1921 and 1923 Chevvies, an old Oakland, and, finally, a 1924 Packard 12-cylinder seven-passenger touring car. One could have had a dance in the back seat.

How well I remember Seattle's Madison Street hill. The supreme test was a 45-degree turn from the top of the hill into an even steeper short block, going over in high gear. Those were the days. . . .
Carl E. Brazier jr.
Lacey, Washington

Dear Sir: It's cheering to learn that Dick Williams, whom I knew in his Western years, is still driving—maturely. Maturity is staying with 55 mph when an 18-wheeler is hissing at your rear bumper, or keeping your cool when a truck hurtles by at 75 with its urgent cargo of potato chips or Kitty Litter, or keeping off the horn when a car zips past you, slices in close, and then takes the next exit, as I think teenagers must now be taught in driver ed.
Ralph D. Smith
Watsonville, California

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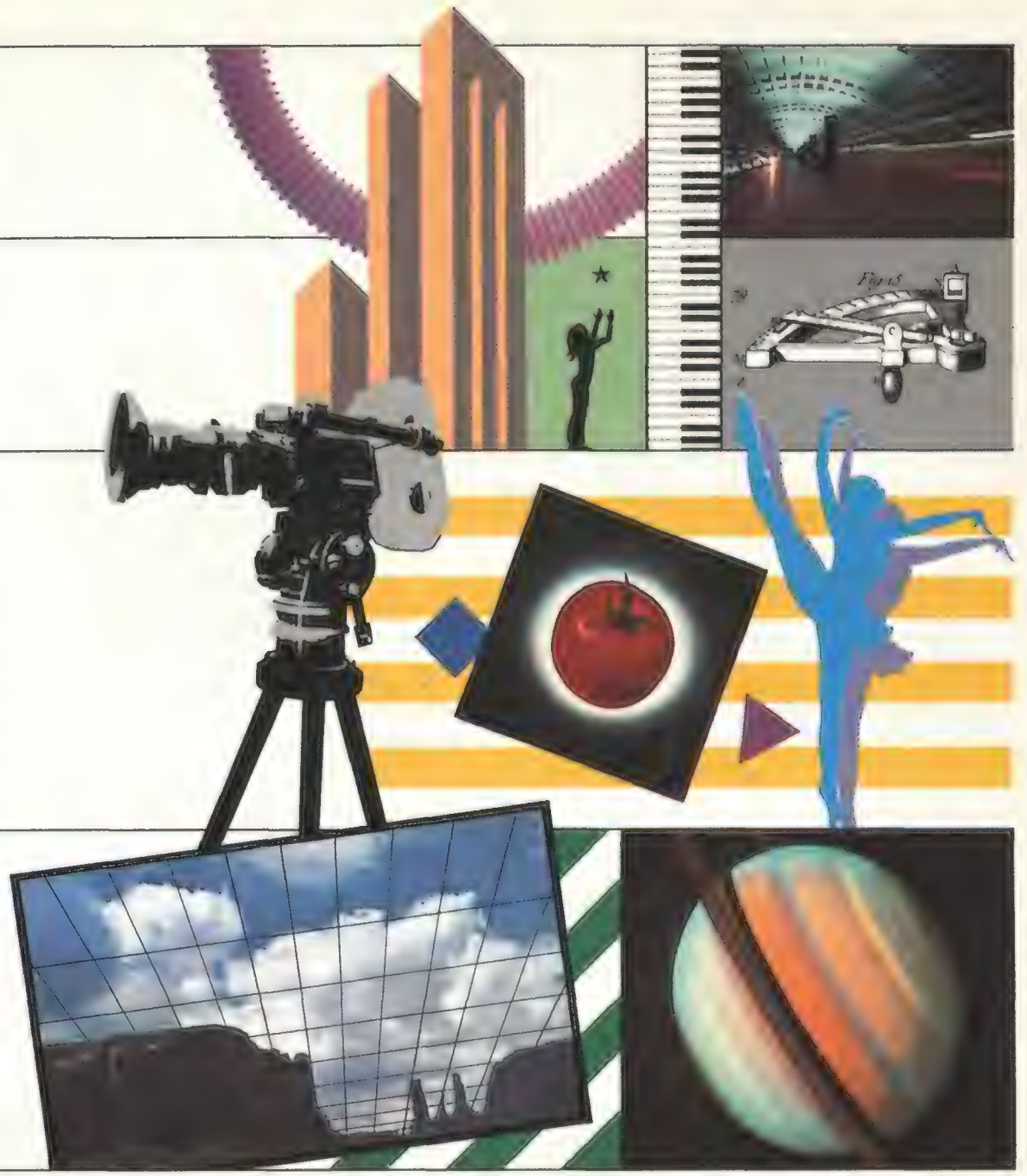

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Around the Mall and beyond

On a sticky day last July I sought the cool of the Renwick Gallery and discovered its director, Lloyd Herman, and a panel of his staff people making profound artistic judgments on the damnedest collection imaginable. The things were cakes. Birthday cakes. All quite inedible. Some were made out of fabric with colored swatches that looked mouth-wateringly like icing—vanilla, chocolate, orange. One was a neon glass tube cake. One was crocheted, and to prove it, here it is (below). It's a little more than two inches high and about the same across. It was designed—and crocheted—by a fiber artist named Norma Minkowitz, from Connecticut.

The birthday cakes were being selected to mark the Renwick's tenth anniversary,

One of the Renwick's phony cakes

at the end of January 1982. In February 1972, this magazine ran an article about James Renwick, the 19th-century architect who designed the old building and for whom the newly opened gallery was named. Now a decade has passed: the magazine has put on weight, and the Renwick has become famous.

The public birthday party is on the last weekend of this month. The gallery will ring with music, while balloons float overhead. And people will see displayed 14 inedible birthday cakes, chosen by the panel I stumbled upon last summer. They were selected from 80 offerings by top-notch artists. I had never before encountered this particular artistic medium: the phony cake.

As an adjunct to these expressions of congratulation, more than 50 varied birthday souvenirs have been designed to honor the Renwick. Some of them will go on exhibit in the spring. These articles range from soft-sculpture pigeons to an electric birthday tart in plastic or porcelain. There is a musical instrument and a postcard made of clay. There is a "nonfunctional magnifying glass" and a re-

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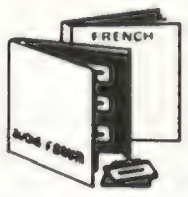

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markable chair. Some items are elegant, some are simply tacky. All testify to the aptitude that artists share for enjoying themselves. In few other lines of work do people receive instructions to be amusing —and then promptly are. Actors can do this, of course, and I guess a good courtroom lawyer can comply this way. I know that writers generally can't. If told to write something funny, they twitch and tremble and their minds jell over like cold fat.

Besides marking the Renwick's first decade, this month provides the 100th birthday of Franklin D. Roosevelt. An article about him appears on page 38, but a small addendum deserves a mention. Roosevelt was a collector of nautical sheet music—songs and compositions of the sea that go back to roughly 1800. One of the earliest is *An Historical* (spelled with the antique long "s") *Naval Sonata for the Piano Forte* describing in musical terms the fighting between the infant United States Navy and the Tripolitan pirates who imprisoned and held hostage American seamen venturing past the Barbary Coast of North Africa (SMITHSONIAN, January 1975).

This and other gems of the ocean from the Roosevelt collection were shown me by Dr. Elise K. Kirk, a post-doctoral fellow in political history, who has been doing work at the Smithsonian with guidance from Margaret Klapthor, curator in the Division of Political History. Dr. Kirk, an adjunct professor at Southern Methodist University in Dallas, combines a zest for history with a sharp editorial skill and a love and understanding of music. She is founding editor of the *Dallas Opera Magazine,* which incorporates the programs of that city's opera.

This diversity of interests and talents has led her smack into a book project, an account of music at the White House from its earliest days to the present. It's a wonderful subject with many possibilities. Entertainment at the Executive Mansion has always emphasized music, and often the Chief Executive helped supply it. One thinks of Jefferson and his violin and Truman at the piano. But Dr. Kirk points out that Chester A. Arthur, one of our lesser knowns, performed for pleasure. That fact is less documented than the old saw that Ulysses S. Grant recognized only two tunes—one was *Yankee Doodle* and the other wasn't. As for

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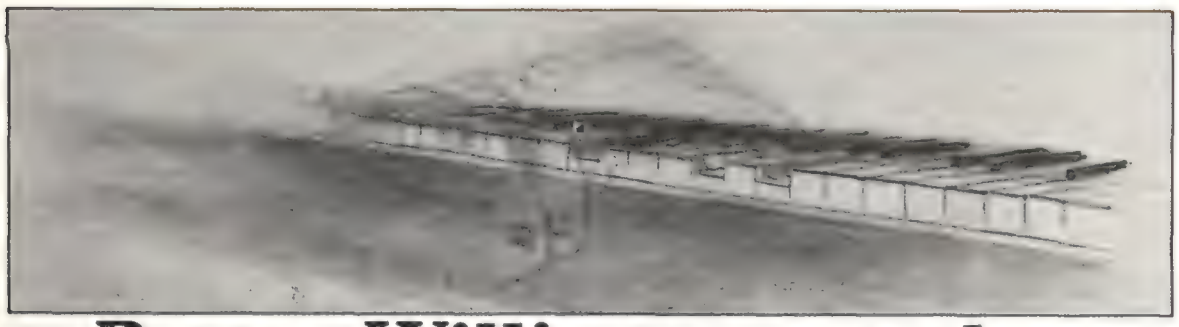
FDR, he had a deep interest in music and a fine singing voice.

"He sang in school and in college," Dr. Kirk told me, "first, of course, as a soprano, then when his voice changed, as a tenor and finally as a baritone. He even took voice lessons when he was 17."

While at Groton, young Roosevelt also played the organ. At Harvard he made the freshman glee club, no small achievement, and became its secretary. Add this involvement to an interest in ships which crops up in drawings made when he was only five and which aimed him toward the Assistant Secretaryship of the Navy, under President Wilson, and the Roosevelt collection of nautical sheet music becomes as inevitable as Dr. Kirk's propensity to write about it.

The collection resides at Hyde Park in the Franklin D. Roosevelt Library, near the banks of the Hudson. Several of the sheet music covers are in color: *Last of the Alabama, Battle of Port Royal, The Old Constitution* for example. That naval sonata called *The Siege of Tripoli* is what Dr. Kirk calls a descriptive parlor piano piece, typical of the early 19th century. It was composed by someone named Benjamin Carr, who lived from 1768 to 1831. It's divided into segments, each labeled to let you know where you are as the music tells the story of piracy and heroism, the triumph of true-blue American virtue over the nefarious Barbary pirates.

Mrs. Reagan at her gown presentation, (p.28).



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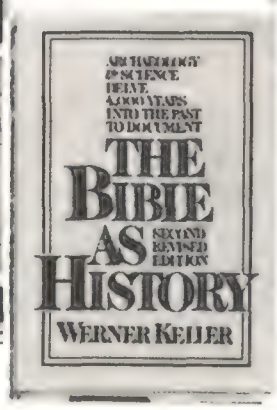
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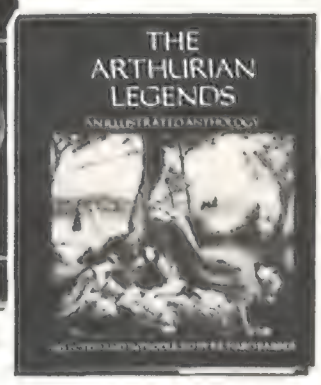

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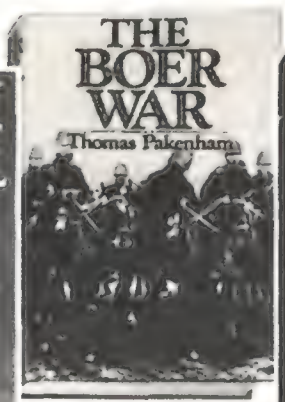

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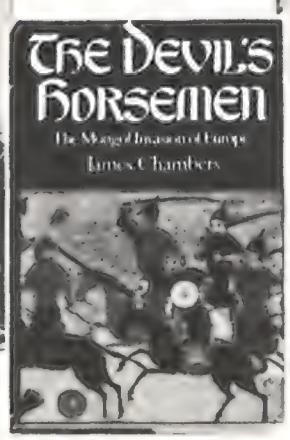

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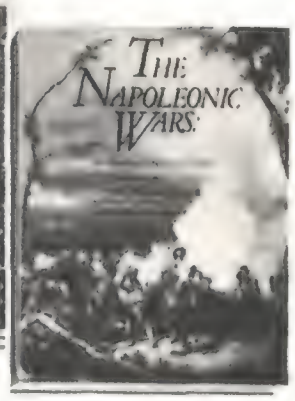

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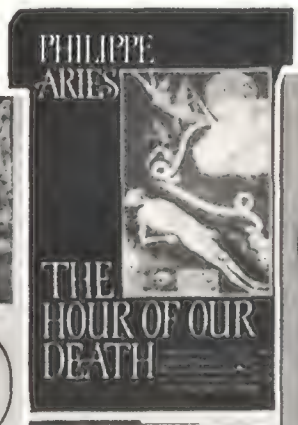

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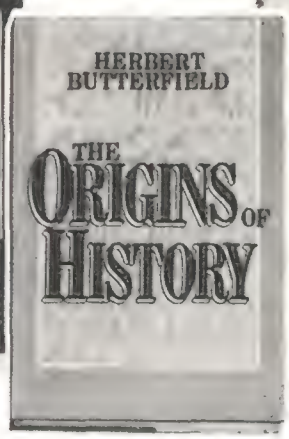

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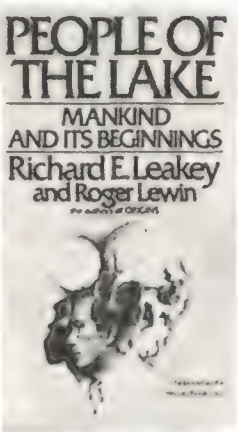

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"Marine March," say the written notes; then "Moorish March." A few bars farther on "Commodore Preble gives the Word of Command," and soon it's "Marines call'd to Quarters." The action picks up: "Cannons"; "Musquetry of the Marines"; "The Combat more fierce"; "The Americans board the Tripolitans who defend themselves with their Sabres"; and so on to victory and "Shouts of the American Seamen." Here, in the margin, the pianist is instructed to "Place the little finger on C & the thumb on E: slide up keeping the same position all the way."

There are serious songs like *The Lighthouse*, the verses of which were written by the Irish poet, Thomas Moore:

The scene was more beautiful far
to my eye
Than if day in its pride had array'd it
The land breeze blew mild and the
azure arch'd sky
Look'd pure as the spirit that made it.

That's how it starts.

There are also comic songs such as *The Mariner's Adieu* and *Oh, What a Row!* (or the Adventures of a Steam Packet), a "new comic song as sung by Mr. Barnes." It's got six verses which I failed to copy. But it's nice to think that as well as having been sung by Mr. Barnes, those words may have rung through the White House in the trained baritone of Mr. Franklin Delano Roosevelt.

Eleanor Roosevelt donated the gown that is on exhibit in the First Ladies Hall in 1941, the beginning of her husband's third term.

Exactly 40 years later, Nancy Reagan did the same thing. There was a ceremony. The corridor that leads to the First Ladies Hall in the Museum of American History was filled with the kind of hard seats that hitch together. Invited guests sat quietly and murmured to each other. A six-piece ensemble from the Marine Band played. Five strings and a concertina. From the rear of the hall you could hear only the bass viol. You could tell when the chord changed, but you were as bad as President Grant at recognizing the tune. Behind the seats, over by the Foucault Pendulum, the regular museum visitors were held at bay by those ropes that are encased in imitation leather. They hadn't a clue what was going on. They were stenographers on a long lunch hour, earnest college students with knapsacks, schoolchildren and their teachers. They chatted without inhibition.

There was a stir of activity. Television lights blazed on, bright and white. Secret Service men cleared a path. People clapped. A cameraman swung his long-lens camera with the coldly intent expression of a machine gunner waiting for an enemy platoon to slip through a defile.

The official party appeared. The First Lady looked charming and lovely. The speeches were made. Lights caught the mannequin beside the podium, clad in this deceptively simple gown. Left shoulder bare. The mannequin's face is the same old reproduction of Pierce F. Connelly's sculpted bust of King Lear's Cordelia.

We went to have a closer look and to do some sipping and nibbling in the presence of Mrs. Reagan. She is the fourth First Lady that I have helped through this ritual. Happily, I can report that she earned an A.

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Phenomena, comment and notes

For many scientists, the question has changed from how we adapt to whether we can adapt to the future

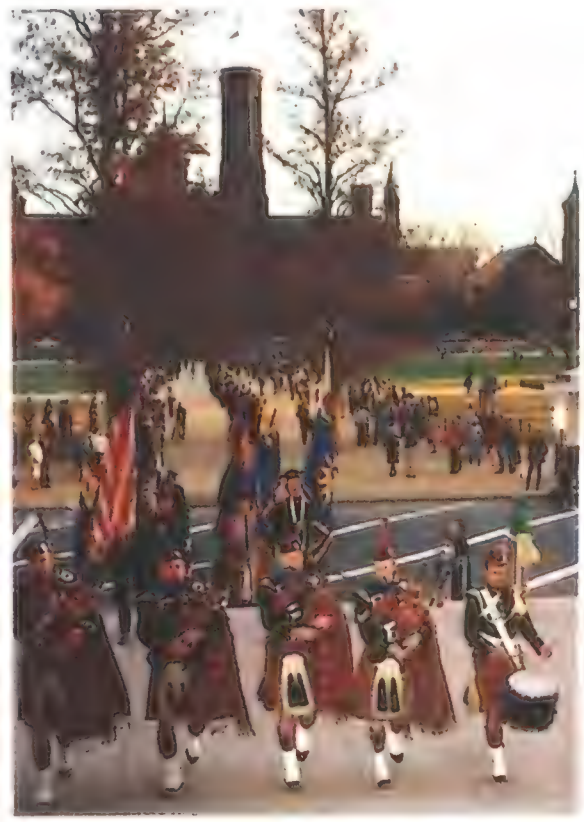
On a clear Sunday afternoon last November, with the sun setting behind the U.S. Department of Agriculture and a gibbous moon brightening over the National Air and Space Museum, a berobed column of scholars processed across the Mall and into the National Museum of Natural History. More ceremonies inside opened three days devoted to the questions of how humans adapt and what implications past adaptations have for our future. While children kicked soccer balls and itinerant gulls fought over food scraps outside, the scholars worried about whether humankind will be able to adapt to the changes it is bringing about.

The symposium opened and closed on hopeful notes, but many of the speakers in the working sessions were less optimistic about our capacity to adapt. In his opening address, even determinedly optimistic René Dubos said much of what we call adaptation is merely tolerance of bad conditions. "City dwellers," he said, "adapt to starless skies and bad bread." He fears human societies have become too large to manage, and argued that our social adaptation to the future should focus on new ways of life, new social structures, compatible with our unchanging fundamental needs.

That last phrase was a key to the symposium. No matter how spectacular our culture, we are genetically the same basic people who lived in small bands on semitropic savannahs until just yesterday, evolutionarily speaking. In fact the symposium itself is the direct result of a paper on primitive South American Indians published in *Science* magazine 12 years ago by James V. Neel, professor of human genetics at the University of Michigan Medical School. In that paper Neel had argued that primitive Man was characterized by a breeding structure "incorporating somewhat more wisdom and prudence than our own." He proposed an "extremely conservative" program of human genetics which advocated "a return to as many of the features of the population structure under which we evolved as is consistent with our present culture." He also saw modern science challenged to integrate the applications of new knowledge smoothly into the ecosystem:

"In the most sophisticated way we can summon, we must return to the awe, and even fear, in which primitive Man held the mysterious world about him, and like him we must strive to live in harmony with the only biosphere that we can be certain will be occupied by our descendants," he concluded.

By last November, Neel was surprised by his own growing pessimism. He is concerned about the potential genetic consequences of recent cultural changes, such as the loss of genetic diversity brought on by increased mobility and mixing, but much more alarmed about cultural



Bagpipers lead column of robed scholars across the Mall for start of symposium.

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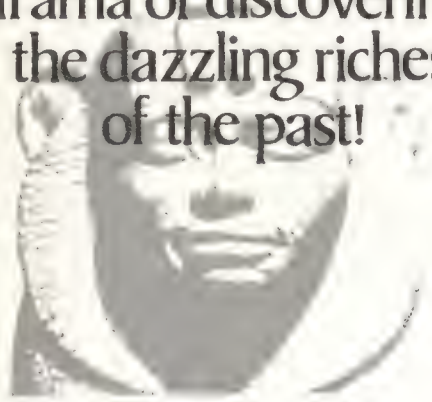

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changes that are happening much faster than any genetic ones. Population growth, loss of arable land, destruction of rain forests, mineral depletion are all challenges, he says, we will have to meet with "primate brains which have undergone some poorly understood modifications."

Jane B. Lancaster, a University of Oklahoma anthropologist, suggested the biological cycles of primitive hunter-gatherers have implications for some of our current problems of early teen-age pregnancy, child abuse, human learning of parenting behavior, and changing male and female roles. Far from producing as many offspring as possible, it seems, our ancestors combined late adolescence, teen-age sterility, long lactation, low fertility and early menopause to help space out their children at roughly four-year intervals and give them some 16 years each of intensive care. (The system was not perfect, of course. It relied heavily on sexual taboos, and if they failed infanticide was the culturally approved last resort.) Lancaster quoted R. V. Short's estimate that a typical hunter-gatherer woman spent just under four years of her reproductive life pregnant, just under four years in menstrual cycles and nearly 15 years lactating, without menses. (This last is not simply a function of breast feeding, but of the unusual frequency of nursing—two or three times an hour during the day and several times during the night. The almost constant stimulation leads to regular surges of prolactin and suppression of estrogen and progesterone in blood serum.)

In his essay for the symposium, Neel lamented the probable extinction of intact primitive cultures by the year 2000. Now that we have the understanding and the techniques to analyze ourselves evolving, he wrote, "the opportunity is gone. This final loss is a very small event in the perspective of the magnitude of the human tragedy which is the history of the Western World's contact with its primitive contemporaries."

Smithsonian anthropologist John C. Ewers offered his own lament. Forty years ago he had spent much of his time with the oldest Blackfeet Indians in Montana, the last who had lived the old buffalo-hunting life. Now, Ewers says, he hopes what he wrote is accurate, because it literally is "the last word."

Another theme often repeated through the three days was how our apparent con-

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quest of nature has given us confidence that we can do anything we decide to. Dubos had said it opening night, and the sentiment echoed again and again. "Confidence is adaptive," said Betty J. Meggers, another Smithsonian anthropologist, "and many cultural practices have as one of their functions the maintenance of confidence." But it can also become maladaptive, she added. "This seems likely to be true of our confidence that burgeoning human population, substantial modification . . . of the atmosphere, significant depletion of the natural biota, incremental exploitation of nonrenewable resources, massive injection of toxic materials into the soil, the sky and the sea, and large-scale preemption of food-producing land for other uses are temporary 'problems,' which 'we' will somehow solve when it pleases us to do so."

Meggers went on to question exactly who the "we" might be, as had Mary Catherine Bateson, Amherst College dean, earlier. The "we," Meggers judged, are not all humanity, not the Chinese or the !Kung Bushmen, but only "the intellectual products of Western Civilization, represented by the participants in this Symposium. In the context of the world today, much less of natural selection, the likelihood that 'we' will decide the future of the planet seems to me vanishingly small."

Policy analyst Richard J. Barnet agreed with Dubos that nuclear warfare and underutilization of human potential are the greatest immediate problems. Dubos had called youth unemployment the greatest tragedy of our time, a problem that will lead to destructive social conflict. Barnet said we have not begun to understand the costs of controlling "unneeded" people. Society begins by paying an increasing tax in locks, guns, jails, private armies and so on. "Markets do not grow because unemployed, repressed, and rootless masses do not make good customers." Finally, he argued, in a society under siege, creativity is threatened.

Barnet fears new technologies will make many more people unneeded, including many who are now in the middle class, and that without new political forms to go with the new technologies we will have internal political breakdown and civil war.

Harry Woolf, director of the Institute for Advanced Study in Princeton, agreed, saying we are already riding a wave over our social theories. Industrial and technological leadership—and the accompanying capital—is already moving to Japan and Southeast Asia, he said, calling it "adaptation with a vengeance." He saw Japan moving as quickly as possible to get rid of heavy industry such as steelmaking, principally by having it done in "less developed" countries such as our own United States.

No one wanted to turn any clocks back. Donald J. Ortner, the physical anthropologist who will edit the symposium book, displayed a skull from an early Bronze Age city in Jordan. A piece of the skull had been chopped out with an ax (although the wound had healed). The skull rested on the speakers' table for the three days, a somber counterpoint to the Smithsonian mace that rested on a red velvet cushion during evening public lectures. Napoleon A. Chagnon, an anthropologist from Northwestern University, showed slides of an ax fight among present-day Yanomama Indians located in southern Venezuela and northern Brazil.

Some participants were sanguine about the way things are going. As Kenneth E. Boulding of the University of Colorado put it, "all species are endangered and always have been." Another economist, Wilfred Beckerman of Balliol College, Oxford University, argued that if we really cared for the natural world, we would disappear. (I, myself, have often thought that the nicest thing I could do for the planet would be to lie down in my compost pile.)

But many were clearly worried that humankind would not adapt to a changing world in time to save our species. Neel pointed out that politicians do not plan for the long term (almost as he was speaking, the December *Atlantic* had David Stockman saying "I'm just not going to spend a lot of political capital solving some other guy's problem in 2010"). But scientists have no such limitations, Neel said, and thus it may be time for them to alert the public.

The symposium was the seventh in a series begun in 1965 to mark the 200th anniversary of the birth of James Smithson, the Institution's founder. The next, scheduled for December 1983, will honor George Orwell's *1984* with an examination of closed and open societies.

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Hans Selye, C.C., M.D., Ph.D., D.Sc., F.R.S. (C):

ON EXECUTIVE STRESS

How to manage and cope with it for a longer, healthier, more fulfilling life

PUBLISHER'S NOTE: *A distinguished endocrinologist and the world's acknowledged authority on stress, Dr. Hans Selye has served since 1945 as Professor and Director of the Institute of Experimental Medicine and Surgery at the University of Montreal. His stress concepts have permeated medical thinking and now influence medical research in every land. Currently, he is Emeritus Professor at the University of Montreal and President of the International Institute of Stress. For the growing international fraternity of researchers, the Hans Selye Foundation has begun publication of a special journal, STRESS. As a longtime member of our Editorial Board, we have asked Dr. Selye to brief you here on stress in executive life and effective means for its management.*

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By Joseph Alsop

Roosevelt remembered

A century after FDR's birth, a distinguished journalist who knew him well reflects on his qualities as a man and as a national leader

The year 1982 is the centennial of Franklin Delano Roosevelt's birth; it is also the 50th anniversary of his first election in 1932. Americans have seen no less than eight Presidents take the oath of office since Roosevelt's death at Warm Springs, Georgia, in 1945, and he is already a remote and half-legendary figure. Yet few today will deny that he was one of the great Presidents in the classic American mold. Even on the very short list of great Presidents of the first order, furthermore, Roosevelt has a special distinction. Just as George Washington was needed twice, to lead the American Revolution and then to take the lead in founding a new government on a more secure foundation, so Roosevelt had to deal with the devastating danger of the Great Depression and then to deal with all the dangers of the Second World War until he died on the eve of victory.

When he died, he had been in the public spotlight more or less continuously for three and a half decades, and he had lived and worked in the full glare of the White House for over 12 years. Yet to this day, Roosevelt's central achievements remain incompletely understood. And despite the exploration of huge archives and the publication of many thoughtful studies, Roosevelt the man also remains more than a little mysterious.

The first step to take in any attempt to understand and assess Franklin Delano Roosevelt is to try to understand the situation and ambience he was born into. At this very first point of departure, moreover, a high proportion of recent students of Roosevelt have tended to go wrong, for they are sadly given to describing him as an "American aristocrat." There is no such thing, and anyone using that phrase would have been dismissed as "common" at Hyde Park or any other house inhabited by members of the tribe Roosevelt belonged to.

One short passage may be borrowed from Edith Wharton's *The Age of Innocence*: " 'Don't tell me,' Mrs. Archer would say . . . 'all this modern newspaper rubbish about a New York aristocracy. . . . Our grandfathers and great-grandfathers were just respectable English or Dutch merchants, who came to the colonies to make a fortune and stayed because they did so.' "

All this may seem singularly unimportant, but the point is that both Franklin and Eleanor Roosevelt *thought* differently when they were young. She recorded that as a young married woman she still believed what she had been taught, that "New York Society was important."

In different ways, the childhoods and younger years of Franklin and Eleanor Roosevelt were somewhat abnormal, as compared with the early years of other young New Yorkers of their kind and time. In the case of the future President, the abnormality—which was slight but still important, as I think—derived from the fact that he was brought up in a way that was already distinctly old-fashioned, perhaps because his aging father was distinctly old-fashioned.

In the main the elder Roosevelt busied himself with the management of small old family-connected companies like the Lake George Steamboat Company.

Franklin Delano Roosevelt in 1928, making his first campaign for the governorship of New York.

This article is adapted from Mr. Alsop's FDR, A Centenary Remembrance *(Viking Press). He has written, among other books,* From the Silent Earth *and, forthcoming,* The Rare Art Traditions.

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On vacation from Harvard in 1902, Roosevelt (in striped shirt) romps with friends and cousins.

This did not keep him busy at all continuously, either; for most of each week he remained at Hyde Park, and his chief effort and time were given to his land and his herds there. He was in fact a country gentleman with a comfortable amount of inherited capital to support the gentlemanliness.

He had already settled into this pleasant, respectable, but fairly obscure niche when his first wife died in 1876. He was evidently one of those men who must be married, however, and four years later, although James Roosevelt was no less than 52, he married the future President's 26-year-old mother. It was an odd match, and it was at first opposed by the bride's father, Warren Delano. Yet even the rich and masterful Delano could not find the match objectionable on any grounds except disparity of age; his daughter was determined to marry her elderly suitor, and so the wedding occurred in October 1880.

In her childhood and girlhood, the life of Sara Delano Roosevelt had plainly centered on her father, which was perhaps why she chose to marry—and she had a wide choice—a man old enough to be her father. Once she was married, however, her entire life centered exclusively on her husband and then on her son. The result was a childhood and early boyhood for Franklin Roosevelt that was fairly unlike the early years of other young New Yorkers of his sort.

During a large part of the time, he was alone in the country with his father and mother, for they mainly remained at Hyde Park when they were not abroad, and he was again alone with his parents on the long pilgrimages to Europe the trio made every year. His father was affectionate and companionable; his mother was doting; his nurses and governesses were much attached to their handsome and lively charge; so he had a happy childhood and early boyhood. But the fact remains that he was much more isolated from his contemporaries than had been the case with the great majority of the other boys he found at Groton, where he went, considerably later than was then usual, into the Third Form at the age of 14-plus.

The importance of being popular

I have emphasized this comparative isolation for a simple reason. I, too, was brought up in the country, and I therefore went to Groton knowing only a single other boy there. It was a grim, even on occasion a desperate, experience. Hence I suspect, perhaps wrongly and with no direct evidence to support my suspicion, that Franklin Roosevelt's much earlier experience was at least similar to mine and perhaps even worse.

It easily could have been worse, because the young male WASPs who went to Groton were even more stereotyped in the future President's generation than they were in mine. I was then too fat to be athletic, but he was too slender and a bit weedy as a youth, so neither of us had the supreme advantage (at Groton) of being good at games. But at least I was permitted to retreat into the library—although even in my time, a mother boasting of her son's precocious bookishness had been known to be told by Groton's famous Rector, Dr. Endicott Peabody, "Don't worry about it. We'll soon get *that* out of him."

What truly happened to Franklin Roosevelt when he went to Groton is worth taking time to consider, in turn, because of the peculiar atmosphere in which the future President was formed. Among his contemporaries of similar origins, whether male or female, being "popular" was then of almost inordinate importance—as so often in small closed groups.

The fact is that, while never disliked, he never attained the grand goal of being popular, although he plainly wished to do so. This was just as much the case among the girls he danced with when he was old enough to go to the big balls of that era, as it was

among his male contemporaries. At least one historian has noted that the girls' name for him was "feather-duster," because his brand of the badinage then thought suitable for female company was somehow unreal and unconvincing. My mother, who knew him well at that time, once told me that another name for him was "the handkerchief box young man," because his good looks in those early years, though undeniable, too much resembled the rather awful good looks of the young men then customarily portrayed on presentation boxes of feminine handkerchiefs.

There was also a solemn entry in an early diary which my mother made as soon as she learned of Franklin Roosevelt's engagement to Eleanor Roosevelt, to the effect that he was by no means good enough for her. It seems an unexpected observation in the light of hindsight, but it still has significance. So does the fact that Franklin Roosevelt had no greater success with his male contemporaries of the same sort—the reason that he was not made a member of the Harvard club of his choice.

I believe it mattered a lot for his future. When he decided to enter politics in 1910, one factor was obviously his boredom with the law, and another was the example of Theodore Roosevelt, whom he vastly admired and plainly took as a model. But it seems to me all but certain that a third factor in his decision, perhaps subconscious, was the desire to stake out his own territory, where he would not be in competition with other young men of his own sort.

Franklin and Eleanor at Campobello Island in 1904, the summer after their engagement was announced.

A mother who remained possessive

As to the hard facts still missing, James Roosevelt, to whom his son was greatly attached, died of heart trouble while Franklin Roosevelt was at Harvard, whereupon his mother promptly moved to Boston to be near him. This astonishing move by Mrs. Roosevelt reveals the possessiveness which was the senior Mrs. Roosevelt's dominant characteristic. It is no wonder, therefore, that when her 22-year-old son told her that he was engaged to his distant cousin, Anna Eleanor Roosevelt, and wished to marry her forthwith, the senior Mrs. Roosevelt went to considerable lengths to prevent the marriage, including requiring Franklin to join her on a prolonged Caribbean cruise in the hope that he would forget all about it.

His mother had a weapon to use, too, because her husband had left her a considerable share of his fortune for her life and the place at Hyde Park as well, and she controlled her own large Delano dowry and inheritance. In all, therefore, his mother had about $1,300,000—substantial wealth in those days—as well as owning the house Franklin Roosevelt regarded as his real home to the end of his life. Meanwhile, he had only about $300,000 of his own, all told, as late as the middle 1920s when he invested heavily in the resort property at Warm Springs, Georgia, where he still hoped to regain the power to walk. Until his mother's death, in fact, the largest part of his own unearned income must have been the allowance she paid him.

Probably Mrs. James Roosevelt gave way before her son's insistence on being married because she had no very good arguments to use against the match. Her prospective daughter-in-law, after all, was a wholly conventional choice for anyone in her son's position—if not exactly beautiful, at least well known for her goodness and seriousness, coming on both sides from families of just the right kind, and even possessed of what was then a pleasant though far from enormous income of her own from her mother's and father's estates. In the first years after the marriage, in fact, the wife's contribution to the joint resources was as great as the husband's.

Of their earlier life, little needs to be said, except that they lived in a hotel until he passed his bar ex-

Radiating vitality, FDR was snapped in Washington in 1920—a year before he was stricken with polio.

aminations; that the senior Mrs. Roosevelt then rented, furnished, and staffed a small house for them; and that they ended in a much larger house Mrs. James Roosevelt built for them, which they used until long after Franklin Roosevelt became President.

For some time, Franklin Roosevelt had been turning the possibility of a political career over in his mind. The late Grenville Clark, who was Franklin Roosevelt's fellow clerk at the powerful firm of Carter, Ledyard and Milburn, used to recall his astonishment when Roosevelt announced to him that he thought he might be President one day.

Roosevelt further explained that this would require going first to the New York state legislature in Albany, then a while in Washington, if possible as Assistant Secretary of the Navy, then the Governorship of New York, and after that, the White House. This program was modeled closely on the major stages of Theodore Roosevelt's career; but the program also comprises all the main stages of Franklin Roosevelt's own career. [As it turned out, he was elected to the New York state senate in 1910 and again in 1912. In the meantime, he had come out for Woodrow Wilson, who appointed him Assistant Secretary of the Navy. In 1928 and 1930 he was elected governor of New York, and in 1932 to the first of his four terms as President.]

In Washington, he did an excellent job as Assistant Secretary of the Navy, for he endeared himself to the regular naval officers by his enthusiasm for naval power and the remarkable seamanship which he loved to display whenever he went to sea; he handled all the difficult problems of naval contracts and the Navy's labor relations with real astuteness and efficiency; and he made a major contribution to the U.S. Navy's readiness for its role in the First World War.

Beginning to go their separate ways

The Roosevelts had their last two sons during their first years in Washington. It also seems probable that in Washington they began to go their own ways for the first time, albeit very tentatively until a severe crisis occurred in their lives shortly before the Washington years came to an end. One reason for the divergence was simple enough. Franklin Roosevelt loved the world and its pleasures, whereas Eleanor Roosevelt already rather plainly found the world and its pleasures only intermittently enjoyable and even unpleasant on occasion. "Duty first" was just as plainly the leitmotiv of her first Washington experience as it was, indeed, of her entire remarkable and admirable life. One can best see how differently the husband and wife approached the more worldly and pleasure-aimed side of Washington by examining their different approaches to Alice Roosevelt Longworth, Theodore Roosevelt's

elder daughter and thus another first cousin of Eleanor Roosevelt's.

Alice Longworth was one of those people who are major figures while they live, yet leave little behind except their memories. She was beautiful, witty, intelligent and tough-minded, and she had a mortal horror of anything or anyone with the least savor of gush or sentimentality, earnest dullness or overly ostentatious virtue. Simple goodness, moreover, was by no means her favorite human quality. She preferred an ambience more complex, more scintillating and more highly colored than the simply good are likely to generate. Since being good was always Eleanor Roosevelt's grand aim, she was not made for intimacy with her cousin and had rather feared her from childhood.

As a matter of course, both Roosevelts were welcomed in Washington by Alice Longworth and her husband, Nicholas Longworth, a rich, worldly, witty, self-indulgent and already powerful Congressman. But her cousin suspected Eleanor Roosevelt of avoiding going to her house any more often than good manners required, while Franklin Roosevelt went whenever he could, often without his wife in the late afternoon, because he had a "grand time"—his phrase until the end of his life for any enjoyable experience.

"Patience on a monument"

One more reminiscence of those years will be enough to complete this installment of the evidence that a divergence between husband and wife began in Washington. In this case, the evidence comes from the late Mrs. Warren Delano Robbins, whose diplomat husband was a cousin, close friend and former Hudson River neighbor of Franklin Roosevelt. The Robbinses were staying with the Roosevelts when the time came for one of the big private balls that were still given in Washington even after U.S. entry into the First World War. All four went to dinner and the ball together, but Eleanor Roosevelt left long before midnight, explaining that she hated dancing and would send the car back.

When the other three got home at last at nearly 4 A.M., they found Eleanor Roosevelt impersonating patience on a monument on the doormat of the Roosevelt house. Rising from her doormat, she explained sweetly that she had "idiotically" forgotten to bring her own door key. Her husband a bit acidly inquired why on Earth she had not taken a cab back to the ball, to get a key from him (for there were plenty of cabs on the street in Washington in those days). "I knew you were all having such a glorious time," she replied, "and I didn't want to spoil the fun."

The truth was, Eleanor Roosevelt was exceedingly angry, because she already suspected that her husband's late hours at the ball were entirely owing to the presence of the beautiful Lucy Mercer, later Mrs. Winthrop Rutherfurd. A great deal has been written about the relationship between Mrs. Rutherfurd and the future President, little of it accurate. For one thing, until the very last years of her life, Eleanor Roosevelt pretended for the record that there had been no such relationship.

As for Mrs. Rutherfurd, in her later years after the Second World War she lived mainly in Aiken, South Carolina, where she was visited by both the late Charles E. Bohlen and Mrs. John Hay Whitney. To Bohlen's astonishment, Mrs. Rutherfurd made it clear that the President kept none of his most intimate wartime concerns and gravest secrets from her. Mrs.

Making light of his handicap, the President swings himself down steps at the White House in 1933.

One-year-old Franklin perches on the shoulder of his father in 1883. The father died in 1900.

On a family trip to Germany in 1892, ten-year-old Franklin takes aim at a target in Karlsruhe.

FDR (right) as "Uncle Bopaddy" in senior class play at Groton. Top hat belonged to his father.

Whitney had grown much attached to the President while married to his son, James Roosevelt, and Mrs. Rutherfurd knew this. To Mrs. Whitney she was therefore even more forthright, telling her that although she loved Winthrop Rutherfurd and owed him much, Franklin Roosevelt nonetheless had been the love of her life.

In sum, Franklin Roosevelt and Lucy Mercer were unquestionably in love with one another in Washington in that long ago wartime; but those who have suggested in print that the love affair followed the usual course of a love affair in the 1980s are erroneous. Except among a minority of "the swells"—always a small set—the ways of the group both Franklin Roosevelt and Lucy Mercer came from had no resemblance whatever to the ways of English society in which known lovers were discreetly given neighboring rooms in big country houses.

Meanwhile, one of the indisputable turning points in Roosevelt's life was his attack of infantile paralysis, which occurred at Campobello in August 1921. He was a recognizably tired man when he sailed for Campobello on Van-Lear Black's yacht, *Sabalo*. Black's captain did not know the Northern waters well; the weather was dirty; and Roosevelt had a long and tiring battle to pilot *Sabalo* to a safe anchorage in Welchpool Harbor in the Bay of Fundy. Home at Campobello, he went swimming in the freezing water with two of his boys, and then jogged home, two miles away, still in his wet bathing suit. He believed in later life

Honeymooning in Venice, Eleanor reads a newspaper and holds FDR's hat while he takes her picture.

This Campobello snapshot shows Franklin, Eleanor, daughter Anna, and FDR's mother—always present.

Roosevelt plays with his son Elliott, then nearly two, at the family summer home in Campobello, 1912.

After his polio attack, Franklin's main exercise was swimming. Here he is at Warm Springs, Georgia.

that his polio had probably begun to develop before he left *Sabalo*, and this would not be surprising in view of the physical tests he had been inflicting on himself; but the disease came into the open only after he got home from swimming with his sons.

His supply of guts again served him well when it came time to try to deal with the heavy handicaps the polio had imposed on him. His approach was quite simply to refuse, and refuse for years on end, to acknowledge that the handicaps could be permanent. He exercised indefatigably, building up the broad shoulders, the powerful arms, and the barrel chest which all will remember who recall the man as he was in his years of national leadership. He also tried cure after cure, ending at last at Warm Springs.

When he discovered Warm Springs, it was a hopelessly run-down, old-fashioned Southern spa; and he put two-thirds of his private fortune—no less than $200,000—into rehabilitating the place. Exercise in the warm-water pool benefited him greatly; he even discovered that, with the support of the warm water, he could walk again despite the extreme weakness of his legs. So he hoped to reach the stage of walking without the water to support him.

In reality, of course, the hope of walking again was delusive. He learned to use his upper body's new strength to hoist himself from a special light wheelchair he had made into any chair he wished to occupy for work or for talk; he had a small car rebuilt in such a way that he could drive without using foot pedals,

Then governor of New York, Roosevelt talks with neighbor at Hyde Park station, November 1930.

and drive he did at Hyde Park and Warm Springs; and he learned to stand erect for considerable periods, albeit not without constant discomfort, nor without the help of a heavy steel brace to keep his legs from buckling under him.

I propose to take a little while to describe the human scene of Roosevelt's endeavors as President, which was also, so to say, the stage on which the country watched him in action. One must begin with the fact that Washington in the 1930s was still small and safe, and the government in Washington was still on a small and human scale.

No security clearances needed

Although Roosevelt had suffered one assassination attempt at the outset, when Mayor Anton Cermak of Chicago was killed by his side in Miami, the Secret Service in the Roosevelt years was always unobtrusive. Nor did you need security clearance or a special card to enter any building in Washington, including the White House itself.

There literally was no White House staff of the modern type with policy-making decisions. Two extremely pleasant, unassuming and efficient men, Steve Early and Marvin McIntyre, handled the President's day-to-day schedule and routine, the donkey-work of his press relations and such like. There was a secretarial camarilla of highly competent and dedicated ladies who were led by "Missy" LeHand, an efficient, very pretty woman who was widely supposed (I never knew whether correctly) to have been the President's resident mistress for a good many years.

As for the famous press conferences, anything of the sort would be totally ruled out now by the enormous inflation of the news-handling business, both in size and self-importance. Today, Presidential press conferences are like vast but occasional circuses. Roosevelt's press conferences were downright cozy, in contrast, with no one there but seasoned professional reporters, all of whom knew one another and did not wish to make asses of themselves before their colleagues or the President they much liked and admired.

The reader may suspect me of nostalgia, and the suspicion is well-founded. Since I have gone so far, I may as well go further. I had the good luck to be assigned Hyde Park for the weekend of the 1936 election and election night. With great difficulty, Mrs. James Roosevelt had been induced to invite everyone to the election night party: all the reporters like myself, the two or three radio reporters (for there was no television then, of course), the entire White House staff from secretaries to advisers in attendance, all the Secret Service men, even the cameramen—a final group whose inclusion was known to have caused the Presi-

dent's mother to come as close to kicking like a steer as a true lady could ever do. Perhaps because her mother-in-law had so strongly resisted the whole project, the commissary had been left to Eleanor Roosevelt, and therefore largely consisted of damp, dank, ostentatiously dreary roast beef sandwiches. But the President made sure there was plenty to drink, and it was a jolly party.

The President was secluded in the dining room with Steve Early and Marvin McIntyre, following and analyzing the returns coming in on three specially installed press tickers—for even radio, in those days, did not reliably cover the whole country. Mrs. James Roosevelt went among her guests, dispensing graciousness with just a trace of the tone of the lady of the manor reluctantly opening a bazaar she considered unworthy of her presence. Eleanor Roosevelt went about, too, very much herself, at once wonderful and a bit puritanical (she had a way of glancing at the quantities of Scotch in peoples' glasses), but above all dispensing a warm welcome to all.

I think of the evening often, primarily because I do not suppose any American President on any future election night will ever again be able to have another family party—for that was what it was like—of the sort I remember so well.

President for less than a year, FDR is greeted by well-wishers at Warm Springs, December 1933.

Not a place for the "beautiful people"

As for the way the Roosevelts lived in the White House, the description involves a word seldom used now; yet the best way to put it is to say that they lived like a rather old-fashioned American gentleman's family in comfortable circumstances. Despite the liveried doormen, in other words, there was nothing in the way they lived that could be said in the smallest degree to be glossy, or particularly conspicuous, or likely to meet with the approval of the new group known as the "beautiful people."

As a young man, the President had always got his suits from an English tailor, as was usual in those days for men of his sort, and I suspect he went on doing so—but he rarely took trouble about what he wore, and he only allowed himself two pairs of new shoes per annum. No one in his senses could have hankered to know, either, which leading New York dressmaker was patronized by Eleanor Roosevelt. Her wedding dress was no doubt ordered from Worth in Paris, but when the trousseau was worn out, one may be certain she never again saw the inside of a leading dressmaker's establishment. As for her hats, on the rare occasions when convention required her to cover her head, her hats usually had the look of having been recently found under the bed.

Then, too, the White House interiors were no more decorated than Eleanor Roosevelt herself. Shabby things and new things, hideous things and fine things, jostled one another everywhere in the private rooms on the second, or private, floor of the White House, while the walls were all but papered with naval prints from the President's collection. The "beautiful people" would not have felt at home; yet their strongest disdain surely would have been aroused by the food that appeared on the White House table—in this case with justice. (The drink, being the President's department, was not actively repellent.)

All the same, I cannot recall the Roosevelt White House today without a severe spasm of nostalgia. I was not asked there often—usually for the family festivals each year, sometimes for the regular Sunday suppers, more rarely when one of my mother's visits to Washington or something similar provided a special pretext. But on all occasions when I could form a judgment—and leaving the food aside—the style of life in the White House in the Roosevelt years struck me as pretty close to the perfect style of an American President.

So much has been written already about the Churchill-Roosevelt partnership that it will suffice to describe how this took the final shape which it fortunately maintained until the President's death. Only days after Pearl Harbor, Winston Churchill, Lord Beaverbrook, and a selection of British military leaders steamed out of the Clyde on a new warship, *Duke of*

York, and made the slow voyage in North Atlantic winter weather to see the President in Washington. At the White House, the British Prime Minister, of course, had the best bedroom. The food at the White House improved noticeably in Churchill's honor, and drink flowed more freely.

What really mattered for the future, however, was that the British and American war leaders now progressed from mutual liking and respect to warm intimacy. Daily he and the President spent hours together, often alone with Harry Hopkins; almost daily they lunched together alone with Hopkins; and in the evening, there were little parties, for which Roosevelt would perform his ritual of making the cocktails himself, and the Prime Minister would then wheel the President to the dinner table in his light, mobile chair.

It only remains to describe the virtues which made Roosevelt a great war President. The outcome is enough to testify to the greatness of these virtues. By any standard, the President's successes reduce his occasional errors to insignificance. He did not seek to interfere in the detailed command decisions of the armed services, as Winston Churchill did continuously. But he still required to be continuously informed in much detail, and he still kept all the major threads in his own hands, straightening out a kink or tangle whenever one appeared. He chose the men who helped lead the war with altogether remarkable good judgment too. It is to be doubted, in truth, whether the American government ever boasted before, or will boast again, such a constellation of great American public servants and military leaders as Washington contained in the Second World War.

Maybe I have become a sorry praiser of the past, as men over 70 tend to do; but this is a personal memoir, and if I truly feel there were giants in the land in the Roosevelt years, I claim the right to say so. Even so, I have not yet come to what seems to me the greatest of Franklin Roosevelt's contributions as a war President. The nature of that contribution is best conveyed, I believe, by an experience of my own; I reached Hong Kong on Pearl Harbor Day with the Japanese forces already across the city's frontier on the mainland. The President went before Congress to ask for a declaration of war the day after Pearl Harbor, and in order to hear him I waited in the otherwise empty mid-level apartment where there was an antiquated although once-costly radio. The President's speech to the Joint Session was heard in Hong Kong, whether directly or by rebroadcast I have never figured out, when the dusk had already passed. The apartment was very imperfectly blacked out, so no lights could be lit and I was in perfect darkness. By then, the Japanese were rather heavily bombing the mid-level, and the bombs were falling only blocks away. The radio was so faulty that I had to lie on the floor with my head just under it, in order to hear much of anything. I got the President's drift, which was easy enough to predict in any case, but I caught no more than one word in two—hardly more than enough to be reminded of the timbre of his voice.

Yet in these fairly gloomy and frustrating circumstances, it never for one moment occurred to me that there might be the smallest doubt about the outcome of the vast war the President was asking Congress to declare in proper form. Nor did I find any other American throughout the entire war who ever doubted the eventual outcome. Even more than the feeling that there were giants in the land, I now feel nostalgia for the absolute confidence in the American future which was the necessary foundation of this total absence of doubt. Hope was in fact Franklin Roosevelt's greatest gift to his fellow Americans. Partly he gave us hope by his deeds, when he came to office in a time that seemed utterly devoid of hope. But even more, he gave us hope because all could see that he himself felt not the slightest doubt about the future at any time in his years as President. Defeats there might be (though they were rare) on this bill or that in Congress. Fearful military misfortunes there were, with Pearl Harbor itself the most notable and hard to comprehend. Grounds for even a slight temporary loss of hope there never were, however—at any rate in the President's mind; and somehow, his mind formed the minds of the overwhelming majority of other Americans who watched him in action in those years of hope.

The strain of office is beginning to tell as FDR campaigns—for the last time—in New York, 1944.

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Near Krafla Volcano in northeast Iceland, molten lava spews into the air from two rows of fissures.

Article and photographs by Randall Hyman

An island trembles astride a rift where our planet's crust is forming

In Iceland, where the Mid-Atlantic Ridge comes ashore, recent volcanic eruptions create fiery illustration of continental drift

Billows of sulfuric steam cloak Hjörtur Tryggvason as he makes his way up the mucky slope of Leirhnjúkur (Clay-peak). Stopping beside a deep fissure at the top of the ridge, he turns and gazes down across the coal-black fields of steaming lava.

"Just before one of the eruptions in 1977, I came up here to watch the fireworks begin in those lava fields. Suddenly the ground beneath my feet started sinking and shaking apart. I got off this ridge as fast as my legs would carry me!"

In October 1980, I learn why Hjörtur must be so nimble. The earth bursts open near Leirhnjúkur once more and sends fountains of lava gushing skyward along miles of fissures. The eruption occurs right on schedule, as predicted by scientists months earlier. Brilliant orange rivers of lava rush in all directions, leaping down slopes as fiery waterfalls. I stand just a stone's throw from the thundering lava fountains, but the "stones" in this case are volcanic cinders that rain upon me in torrents.

The wind changes direction and I am caught in a cloud of smoke that smells of burnt gunpowder. The sulfuric gas burns my lungs; it is impossible to breathe until the wind once again blows in my favor. The scene is like some fantastic excerpt from Dante's *Inferno*: awesome, terrible and compelling. Unable to pull myself away, I receive unwelcome persuasion. A large chunk of lava hits me squarely in the back and a smaller piece smashes into my camera lens. Remembering Hjörtur's words, I make a quick retreat.

Hjörtur shrugs off this kind of danger; it's all part of his job as field recorder for Iceland's National Energy Authority. As he straddles the fissure on Leirhnjúkur to measure the ever-increasing gap, Hjörtur jokes that he has one foot in America and the other in Europe. He is referring to the North America and Eurasia "plates" which, according to continental drift theory, are spreading apart at an average rate of two centimeters (almost an inch) per year. It is Iceland's dubious honor to be caught in the middle, atop the Mid-Atlantic Ridge, one of the few growing countries in the world!

Until 1975, the Ridge had not spread in northeast Iceland since the last recorded volcanic activity some 100 years ago. Suddenly, in the autumn of 1975, the earth came to life. Over the past six years, this 80-kilometer (about 50-mile) portion of the Mid-Atlantic Ridge has rifted apart five meters (16 feet), erupted eight times, and shaken the earth with thousands of earthquakes. It is the supreme opportunity for scientists to study an active section of mid-ocean ridge.

The author, a free-lance writer and photographer living in St. Louis, studied at the University of Iceland and is fluent in the Icelandic language.

The Mid-Atlantic Ridge comes ashore

"Cheap oceanography" is what one scientist has called the land-based research being conducted here by the Nordic Volcanological and Sciences Institutes of the University of Iceland, and the National Energy Authority. Elsewhere in the world, spreading plate boundaries are found strictly on the ocean floor. Only in Iceland can geophysicists abandon their diving gear to hike along the Mid-Atlantic Ridge and measure the growing rift between Europe and America—or watch it spew lava 50 meters into the air.

The past six years have been a heyday for geophysicists, but a nightmare for many Icelanders; perched astride the region's tangled network of fissures are two geothermal industries and a village.

"They couldn't have built the Krafla Power Plant in a better place for measuring land tilt and predicting eruptions," says Hjörtur. "The main station house sits right above the Krafla magma chamber."

Three kilometers beneath Leirhnjúkur, just north of the Krafla Geothermal Power Plant, simmers a huge chamber of magma. This is the immediate source of the eruptions, christened the Krafla Fires, which have been growing steadily more frequent and massive since they began in 1975. In just the past year and a half, this hidden "volcano" has given birth to five lava eruptions, some lasting longer than a week.

Hjörtur is called the "midwife" of the Krafla Fires. Making his daily rounds to the riftmeters, tiltmeters and seismometers spread across this fault zone, Hjörtur records every contraction of the fiery womb below. Icelandic scientists have used these records to make accurate predictions of eruptions months in advance.

Field recorder Hjörtur Tryggvason explores a fissure; background steam is from hot springs flowing below.

The rise of the land above the Krafla magma chamber is the key to predicting eruptions. The chamber behaves like a balloon being inflated while buried in sand: as the chamber inflates with magma fed from unknown depths, the land above rises. When it becomes too bloated, it bursts. Unlike Mt. St. Helens, Krafla stifles her volcanic sneeze underground, pouring tons of magma into subterranean dikes. These dikes are the hidden roots of fissures that stretch north and south from Krafla. As the magma drains off through many kilometers of these dikes, the land above the chamber subsides. If the magma finds its way to the surface via open fissures, a spectacular eruption results.

As soon as the chamber stops releasing magma the land begins to rise anew. Once the land rises beyond the level attained before the last magma flood, another "breakout" is due. The balloon analogy fits well, for the chamber appears to "stretch" increasingly more with each inflation of magma.

A nightmare out of the past

The Krafla Fires bear a chilling similarity to the catastrophic Mývatn Fires of 1724-29. The Mývatn Fires lasted five years and four months. The Krafla Fires have more than matched that record, erupting from the same fissures that spewed the Mývatn Fires some 250 years ago. So alike are the two periods of volcanism that scientists have been keeping a running chronology of Krafla's eruptions and earthquakes, and matching them against the history of Mývatn Fires. All that is lacking to perfect the resemblance is a final, immense eruption like that of 1729, as described in this account: "Then began the final tempest of fire from a crater near Leirhnjúkur. This eruption was one of the largest to date and lava poured over previous flows with such a fury that it appeared that this would tie the final knot on the total destruction of the county."

As it was, four farms were lost to the flood of lava. A hotel now stands on that same site. Will history repeat itself? Upon entering the hotel, one is greeted with this foreboding sign: "FROM CIVIL DEFENSE —If you hear a steady sound of sirens and see green rockets being fired at the same time, ask the hotel staff for information. If you hear alternately high and low tones from the sirens and see red rockets being fired, go to Skútustadir immediately."

Whether or not the prospective hotel guest chooses to stay for the more-than-warm reception promised by this sign, the 500 people of Reykjahlíd have little choice. They have coped with the danger of eruptions and the violence of earthquakes for the past six years. Ironically, the same volcanic energy that threatens the

horarinsson

For a few hours in 1977, lava spewed forth along seven-tenths of a kilometer of this fissure; some eruptions last weeks. View is south toward Krafla.

town with destruction also blesses it with prosperity—in the form of geothermal energy.

The cornerstone of life in Reykjahlíd is a unique factory that uses geothermal heat to convert seemingly useless sludge from nearby Lake Mývatn into valuable diatomaceous earth. The diatomite is sold in Europe as a filtering agent for swimming pools and wine distilleries. Normally, diatomite is mined only in its dry form; wet diatomite sources are impossibly expensive to dry and reclaim. The happy coincidence that there is plenty of cheap geothermal steam available here has made the impossible possible.

In 1977, the land's volcanic nature turned from boon to bane. The factory's office building was ripped in two by an underlying fissure. Reservoirs holding the winter supply of diatomaceous earth burst open and several geothermal steam wells were damaged.

"We've built a new reservoir and drilled two steam wells, all outside the danger zone, away from any of the fissures," says Hákon Björnsson, plant manager. "Only thing we can't move to safer ground is the factory—but we put a dike around it in case there's a lava eruption."

The diatomite plant sits right on the line of fissures that run south from the Krafla magma chamber. Although the Krafla Fires have always erupted north of the magma chamber, they could just as easily move to the south and bury the diatomite factory and village under lava.

"We'll just have to bite the sour apple if the lava flows the wrong way," reflects Rakel Gudlaugsdöttir, a Reykjahlíd housewife. "I think we're too careless now. This winter we were near hysteria, and now we're

Icelandic sheep wander on cotton grass; behind them is geothermal steam field used by diatomite plant.

just the opposite. It seems like we can't live with this on a middle ground."

The cause of the hysteria was one of the Krafla Fires' largest eruptions, in October 1980. Lava jetted and roared from the earth for six days, erupting first from Leirhnjúkur (dangerously close to the Krafla Power Plant) and then migrating northward for seven kilometers. For the first time, the townspeople realized that they were well within the grasp of Krafla's molten tentacles.

"The whole county lit up that night," says Rakel. "It was like a sunrise with no sun. Everything glowed orange. The energy was incredible."

Authorities, too, were shaken by the October eruption. The Krafla Fires seemed to be growing more frequent and massive with each new eruption. The Icelandic winter was approaching, with its blizzards

In stylized diagram, inflated magma chamber bursts, allowing magma to travel underground in bladelike dike; eruptions along fissure are fed from dike below.

and endless nights; any emergency evacuation during the dark, icy months would be difficult.

The civil defense organization called a town meeting to organize and prepare the people for the worst. Geophysicists were the star speakers. Armed with graphs that showed the land at Krafla rising at an alarming rate, they said that a new eruption could occur as early as late November.

All winter, villagers kept packed suitcases ready at their front doors, and nervously counted each day as the land continued to rise. The eruption was long overdue.

Finally on January 30, 1981, the earth split open with volcanic fireworks far to the north of Leirhnjúkur. Though similar in size to the October eruption, this one was safely distant from the town. In a bizarre way, it was as much an anticlimax as a relief. Frustrated and frazzled by unfulfilled predictions of doom, the town shed its worn coat of worry and donned one of apathy.

"The public misses the point of what's happening at Krafla," claims Páll Einarsson, geophysicist with the University of Iceland's Science Institute. "Journalists always ask us to predict eruptions, and then complain if we're slightly off. They miss the real story. They should focus on the *science*—the research that's going on here. Eruptions in themselves are really nothing special."

Páll calls the Krafla Fires "a rifting incident," not a period of eruptions. The eruptions are simply "minor by-products" of plate spreading on the Mid-Atlantic Ridge. Research at Krafla has revealed important new information about the behavior of spreading plates.

Contrary to the old assumption that plate spreading is a constant, gradual process, the Krafla Fires have demonstrated that rifting can occur in violent surges separated by long periods of dormancy. The Krafla region had not spread for 250 years until 1975, but the five meters the Ridge has rifted over the past six years is precisely 250 years' worth of continental drift (two centimeters per year times 250 years = five meters).

Continental drift theory proposes that the Earth's crustal plates are driven by a global system of convection currents in the hot magma below that behave like giant conveyor belts. Where these currents well upward and push the plates apart, mid-ocean ridges form (SMITHSONIAN, January-February 1975). Iceland, situated astride the Mid-Atlantic Ridge, is the child of such an upheaval.

Prior to the Krafla Fires, eruptions along the Ridge

The Mid-Atlantic Ridge comes ashore

were presumed to be fed from directly below. Dense concentrations of fissures and underground igneous dikes, found widely in Iceland, were thought to have been formed by vertical injections of magma. Now they are recognized to be remnants of Kraflalike rifting episodes. The dikes are frozen blades of magma that penetrated horizontally from a central magma chamber. Some of these dike and fissure swarms are segments of the Mid-Atlantic Ridge, biding their time until it is once again their turn to come to life like Krafla. Apparently, the Ridge spreads not only in pulses, but in sections too.

When Krafla first began to stir in July 1975, construction of the geothermal power plant was still in its early stages. Few people imagined that those earthquakes were the birth contractions of a hidden volcanic womb. The first of the Krafla Fires erupted in December of that year, followed by an intense period of earthquakes. For several weeks the land shivered with up to several thousand earthquakes per day, a few exceeding 5.0 on the Richter scale. Construction of the power plant was pushed through in spite of these omens.

Today, the 60-megawatt facility barely produces one-fourth of its designed capacity; the geothermal steam fields have been "overcooked" by the Krafla magma chamber. The steam wells must be drilled about two kilometers deep, two-thirds of the way down to the level of the magma chamber. Half of the 16 wells (drilled at a cost of one million dollars each) produce steam that is either too corrosive or too hot to use. One well created a house-size crater after exploding from steam pressure and continuing out of control for two months. Several other wells have been damaged, possibly due to the crustal movements.

In their early years, the Krafla Fires consisted more of earthquakes and crustal movements than of fires. During the winter of 1975-76, the land shook ceaselessly for several months as it rifted apart. Life was disrupted in two areas along an 80-kilometer portion of the Mid-Atlantic Ridge. Local citizens say that it was like "being on a ship in bad seas." They removed all breakables from shelves, never filled cups to the brim, and walked like ship stewards when serving meals. The analogy of living on a ship became all too accurate when coastal farmlands began subsiding below sea level: farmers had to row out to their homes.

In March 1980, the Krafla Fires began to earn their name. Numerous magma flows had occurred before that date, filling the huge subterranean cracks formed by rifting of the Mid-Atlantic Ridge, but only thrice had they surfaced and caused small lava eruptions. The March eruption was the first of respectable size in which a considerable percentage of flooding magma surfaced. As an underground dike became too full to handle more magma, the fiery blade of magma had nowhere to go but up.

The earth belched fire for more than a week

Four months later, on July 10, the land erupted like never before. The earth belched fire for more than a week, covering a vast area of the plains called Gjástykki (Fissured-place). It was particularly unusual that more than 30 percent of the lava flow went pouring back into the depths of the earth, swallowed by a large fissure that stood in its path.

Pausing for only three months, Krafla erupted once again in October, turning in its most impressive performance up to then. Thirty-five million cubic meters of lava buried nearly 12 square kilometers of Gjástykki under lava, spewing fire along seven kilometers of fissures. This was the largest and closest eruption that workers at the power plant had witnessed.

After another three months, in January 1981, Krafla erupted again for one week, producing nearly as much lava as in the October eruption. Finally, last November 18, alarm bells went off as the chamber started rapidly deflating; an hour and ten minutes later lava erupted from an eight-kilometer-long fissure that extended north from above the Krafla caldera. Reports said the area of lava flow was greater than any since the episode began in 1975.

Karl Gronvöld of the Nordic Volcanological Institute remarks, "We're surprised that the eruptions have continued for so long, so predictably. We never dreamed we'd be able to deal so effectively with predictions when this first started."

Like detectives hot on the trail of an unseen suspect, Icelandic geophysicists are using laser beams, tiltmeters, riftmeters and seismometers to pry the secrets of the hidden magma chamber and under-

On Leirhnjúkur, Hjörtur Tryggvason takes a gas sample—part of his research for predicting eruptions.

Tryggvason, standing in fault zone of Mid-Atlantic Ridge, measures amount of spread on riftmeter.

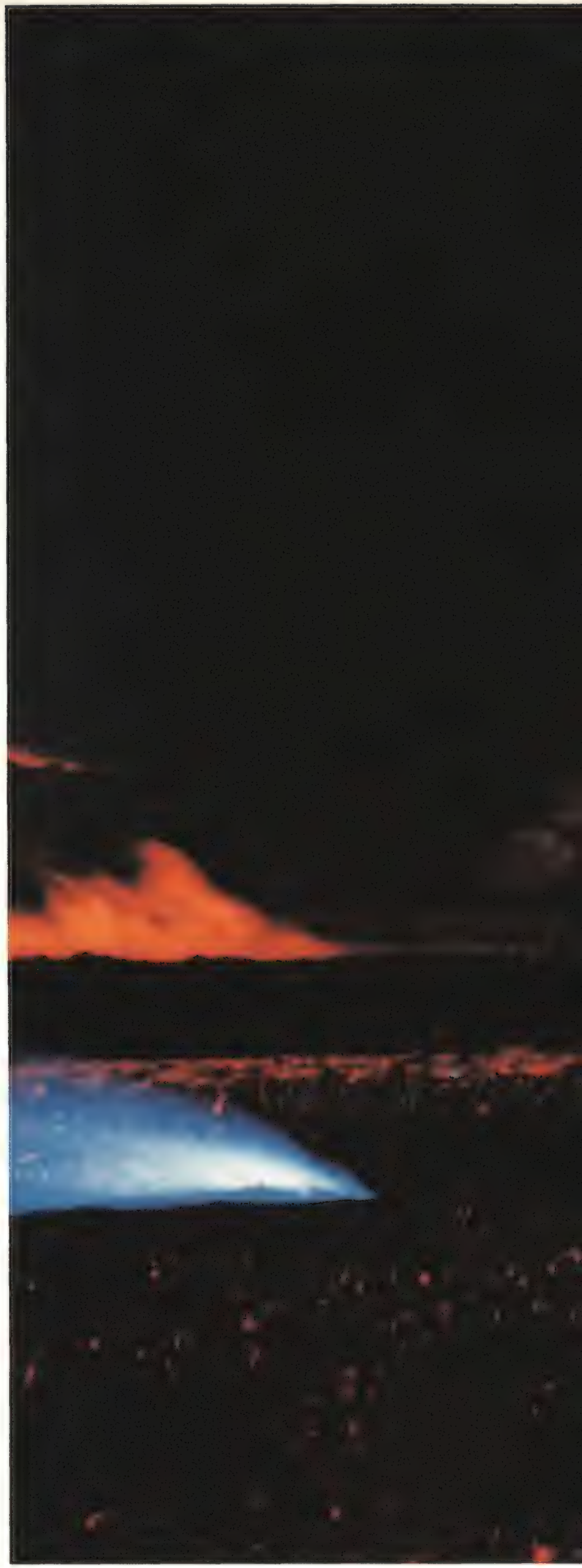
Ropy, shimmering *helluhraun*, lava recently erupted from a Krafla fissure, will turn dull in a few months.

ground dike system. Land surveys are made at three-month intervals with laser-beam equipment to ensure the utmost accuracy in measuring the lift of the land. Tiltmeters are used continuously for the same purpose. The most ingenious and reliable tiltmeter is a long water hose that stretches the length of the Krafla station house: the changing level in vessels at each end reflects tilt.

Another valuable tool is the "homemade riftmeter." Two opposing pipes are anchored on each side of a fissure, meeting halfway across the rift (p.59). The growing gap between them tells scientists which areas are most active and prone to an eruption.

Finally, seismometers are used to determine the speed and direction of underground magma flows when they first burst from the Krafla magma chamber. By monitoring the successive earthquakes set up along the magma's path, geologists are able to track the advancing flood's progress. In recent months, data gathered from the tiltmeters have become more complex, and some scientists say it has become more difficult to analyze the data and to predict future eruptions.

"I haven't missed a single eruption in Iceland since 1934, but the Krafla Fires top them all," comments Sigurdur Thorarinsson, one of the world's veterans of volcanology. "I've seen Hekla erupt like your Mt. St. Helens, Surtsey explode from the ocean floor and become an island, and the fishing village of the Westmann Islands be buried under lava . . . to name just a few. But the Krafla Fires are the most important eruption of my career because of their relationship to ocean-floor spreading."



Standing above flowing magma, gases burning blue at their feet, scientists are lit by rifting hellfire.

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By Bill Moyers

Defining creativity for everyone to see wasn't exactly easy

For a television series about an enigmatic process, an investigator looks to innovative people for some new ideas about new ideas

The author appears before the opening backdrop of his new program, a 17-part series on creativity.

A colleague who heard that I was about to produce a television series on creativity called to ask how I intended to approach the subject. "Warily," I answered. By then I had spent six months reading and consulting with scholars, and I knew that where the experts had clashed mightily, a journalist must tread softly.

After all, the Council of Scholars of the Library of Congress had assembled for a symposium on creativity in 1980, concerned—as one member put it—that "creativity is a confused and therefore debased conception." But while the papers presented by the scholars and the discussions stimulated by them exalted the conception, they came no closer to defining creativity than the scores of books and articles I had already read. If the subject eluded men and women of expert learning, how else could a journalist approach it except with hat in hand and head bowed? Indeed, one Council scholar had suggested, it could even be "a colossal pun to move from science to the arts to civic culture to statecraft and in each case to use the word creativity." I had already begun to think of this venture I had undertaken as potentially a bad joke; would it also become a colossal pun as well?

But there was an out—a qualification added by the scholar upon which the layman could seize for support in a sinking spell of apprehension over the wisdom of first enthusiasms. The aforementioned scholar had added this: "*Unless* [italics gratefully mine] we are conscious of the possibility of a colossal pun, we shall be making connections that do not exist." Here was a condition I was more than prepared to make, for my own research had already roused in me the journalist's innate suspicion that generalizations are generally wrong. I had begun to appreciate the man who said: "Before I got married I had three theories about bringing up kids, now I have three kids and no theories." Six months earlier I had many theories about creativity and no research. Now I had mounds of research and no theories. Just hunches.

Photographs by Bill Ray

It all started innocently enough. I had set out to learn what I could about creativity. It had not even been my idea. A Chevron executive named William Jones had seen my *Journal* on Aristotle with Mortimer Adler. Why not do a program on creativity? he wrote me. In one of those flashes of inspiration sometimes identified as creativity but often, in my business, no more than a desperate act of grantsmanship, I fired back a letter asking: "Why not a series?"

Chevron said yes—in record time, with no strings attached. And there I was: an amateur with a cause and three colleagues, Charles Grinker and Merton Koplin of the Corporation for Entertainment and Learning, and my wife and coeditor, Judith, who is an educational consultant—all tossed about on a turbulent sea churned by the high-horsepower engines of scientists, scholars, psychiatrists, psychologists, historians, educators, sociologists and philosophers whose careers had been devoted to exploring creativity. [The series, *Creativity with Bill Moyers,* funded by Chevron, begins this month on most of the country's public television stations.]

The waves came over our little boat almost immediately. Here was the very considerable novelist Bernard Malamud declaring that "creativity is a complex thing. . . . Maybe sometime in the future they actually will find the genetic tissue that makes it what it is. I don't want to be around when that happens. I want artistic creativity to remain forever a mystery."

But here was the author George Prince acknowledging that although once he had thought of creativity as an extraordinary act producing something new and useful, now he sees it "as less cosmic and more common, an everyday affair, a mode of thought and action that is ultimately associated with learning and changing not only one's self but one's situation."

There you have it—the basic tension between those who believe creativity to be a mystery, possibly a gift to genius alone, and those who believe it can be demystified, nurtured, even democratized. One school will have nothing to do with trying to dissect creativity into scientifically defined variables. Another considers creativity to be the endowment of all of us. This school argues, as the late Lawrence Kubie put it, that "if most of us tend to keep on going through the same old familiar notions, this is not because we are short on creativity but because we stifle it." Discover the impediment, exorcise it, and creativity will flow.

Actually, the conflict represents not only opposing views of creativity but differing ideas about human nature. Two things are implied in the word "creativity," as I have come to understand it: novelty and significance. What is created is new, and the new opens up paths that expand human possibilities. For a long time it was thought that God had created all there was to create; we mortals had only to discover what was already imprinted in the universe. Ours is not to create but to order; we are not agents of change, merely accomplices.

This view of human activity was based on the idea

Bill Moyers was the press secretary to President Johnson and a newspaper publisher before beginning a new career as a television journalist.

To violinist Pinchas Zukerman, "practice can be a dirty word. . . . But if you concentrate on just a little improvement that day and achieve it, you feel great. Nothing can seem to happen to you."

that human nature has an essence to which it must conform. Two streams fed that idea: the Greek notion that everything created has a purpose or end toward which it tends, and the Judeo-Christian notion that every created thing finds its purpose in the aims of God which transcend history. Mortals may understand the nature of things, said the sages, but mortals cannot change what they understand. Or as one of my professors put it many years ago at the University of Edinburgh's School of Divinity: "God has created a cosmic puzzle and it is our task to put it together as He intended." Given such assumptions, it is hardly surprising that the idea of discussing creativity did not enter the mainstream of human consciousness until the 18th century, or that as late as 1933 the word creativity was not in the *Oxford English Dictionary*.

A new vision of human beings

But something had got loose in the world that was to change this view of a predetermined universe. Jacob Burckhardt, the 19th-century Swiss historian, traced it to the Renaissance in Italy when Man began to delight in creating his own world instead of accepting passively that which God had made for him. Albert Rabil jr., Distinguished Teaching Professor of the State University of New York, who has been a consultant to my series, considers the French Revolution to have been a great divide. An entire nation, he writes, "was completely transformed by human activity." The aristocracy, which had been dominant, gave way to the middle-class burghers, already the harbingers of a new, industrialized mass society. There flowered among the Romantic poets and philosophers in the wake of the Revolution a vision of human beings as authors of the drama and not merely its actors.

My Edinburgh professor never had much affection for the Romantics—"secularist rascals," he called them with a salty Scottish Presbyterian disdain. Indeed, this altered view of things sent pains shooting through the teleological groins of theologians everywhere. The notion of a fixed but hidden pattern of things, awaiting Man's discovery but resisting his designs upon it, toppled. Not immediately. Even the philosophers—Hegel first, later Marx—tried to save the appearances and to co-opt this new point of departure by placing it within a process of history determined from within. It took the lonely voice of Søren Kierkegaard to proclaim that determinism was dead and to assert that the human being has no predetermined essence but is defined rather by freedom, the ability to create, and that character follows creation.

As is often the case with genius, Kierkegaard knew that he was ahead of his time and that his readers were not his contemporaries but posterity. In philosophy

With blazing welding torch in hand, work in progress on floor before him, painter and sculptor Gerald Scheck is shown in his studio in Delhi, New York. "Sometimes," he says, "I can hardly get to sleep because images start buzzing through my head. But what comes out the next day is . . . not what I've seen. It's just what manifests itself at the time . . . an artist's vitality is a fragile thing."

and theology, and even in the sciences, his model has found widespread articulation. In America, it found, unwittingly, a whole continent for a laboratory.

I was infected. A great Baptist divine—liberated from the narrow cultural furrows into which his faith had been arranged in the Old South, liberated by the true Baptist's commitment to the democracy of believers—once handed me Kierkegaard's *Either/Or* and said, "Read this, and wonder that an obscure Danish philosopher could thread together Jefferson, Lincoln, Whitman and FDR."

Thus I was positioned—all right, prejudiced—for this inquiry into creativity, coming to discover through reportage what had already infiltrated through history and faith. For the journalist, creativity remains an esoteric subject, surrounded by "No Trespassing" signs, if it is only the gift of God to a chosen few. Only the Michelangelos and Picassos could be creative; creativity would be something to be admired in others, while the rest of us wait around, passive and unalive, for someone else to make things better. If, however, we are speaking not of genius but of a power each of us has, to one degree or another, then the subject is eminently worthy of a television series in which we hope not only to entertain but to learn, in the sense of helping our viewers to unlock hidden, unexplored or unexpressed dimensions of themselves. The people who are our subjects, although often extraordinary, are not so extraordinary that we cannot in some way see ourselves in them. We chose them not because they define the creative process but because they exemplify it. If we wind up with a colossal pun, well—even a joke is creative.

To say that human beings have a creative capacity is not to deny the ordering function of the human mind. During the 1950s and '60s, J. P. Guilford and his associates found both kinds of thinking to be characteristic of human beings: convergent thinking, which neatly and systematically, so to speak, tends toward an answer, and divergent thinking, which tends away from a center, perhaps in several directions at once, seeking avenues of inquiry rather than a particular destina-

Author Maya Angelou relaxes in her Winston-Salem, North Carolina, home, between tours promoting her new book, *The Heart of a Woman*. She speaks of the scars left by her early years. "To write, I have to scrape across those scars to sharpen the point. And yet, I still have never really gone down to look at those scars. I might dissolve. . . . The best way for me to get out is through music and poetry."

tion. Scientists, on the whole, engage in convergent thinking. They attempt to solve problems on the basis of an accepted model or theory that tells them the laws and rules of their discipline.

Sometimes, however, convergent thinking breaks down. The model cannot encompass the problem to be solved. Creating a new model requires divergent thinking. However, the scientist had engaged in convergent thinking prior to seeking a new model (he or she must know thoroughly the science they seek to reform) and must do so again after creating the new model in order to verify it and test the range of problems with which it is capable of dealing.

Convergent thinking, then, is continuous with the past and leads to predictable conclusions on the basis of what has preceded. Divergent thinking makes a series of breaks with the past and leads to unpredictable conclusions on the basis of what has preceded. They are fundamentally different but related. I have a favorite illustration of their relationship. Sir Isaac Newton, who created calculus, a theory of the nature of light and the basis for modern mechanics, all within one year, is rightly regarded as one of the greatest of scientific geniuses. He spent most of his life after he had developed his physics in attempting to develop a similar comprehensive theory for chemistry. But he failed. Why? Because the science itself had not developed to the point where even a Newton could see the

new order that he sought and that we today call modern chemistry. That came more than a hundred years after Newton. Newton's leap in physics was new and could not have been predicted by what had gone before, and yet what had gone before in the development of mathematics, astronomy and mechanics was sufficiently powerful to make possible a new and comprehensive model. Newton himself recognized this when he said that he had "stood on the shoulders of giants" (don't we all!). But the shoulders of the giants were not yet high enough in chemistry during his time, and in their absence, not even his genius could break through.

We can say, then, that creative thinking is discontinuous within a context of continuity. The Council of Scholars symposium declared that the failure to grasp the relationship between creativity and tradition "is often due to an ignorance of the resources upon which an innovator has drawn in making his radical new proposals." Appreciation of the creativity of the Renaissance, for example, has been transformed by the scholarly discovery of "the subterranean channels" connecting it to the Middle Ages.

"You carry your home wherever you go"

This, of course, is not something we discovered in filming a series on creativity. But on a journalistic level we confirmed it time and time again, and not just in science. All creative behavior breaks from the past but remains indebted to it. Maya Angelou—poet, author, director, actress—told me that she never "left" Stamps, Arkansas, although she had moved from the little Southwest Arkansas town 30 years ago: "You carry your home wherever you go." I chose her for the series not alone for her career, but for the testimony she gives to the insistence of scholars that we can never look at creativity in terms simply of what goes on in a person. What is occurring is always a process connecting the person with the world, including the past; it is always of a piece, beginning in childhood and before. When I asked Maya Angelou to go back with me to where her own nascent creativity was first threatened and then forged, she did not want to go. But finally she agreed, and we glimpse just how creative behavior grows from deep roots, which it never totally severs even as it transcends them.

There are other examples. Fred Smith, who founded Federal Express, had some compelling sense of duty which motivated him from childhood and became obsessive while he was in Vietnam. Samson Raphaelson, the playwright, says that the drive to be creative has its roots in some remote past no longer operating consciously but still there nonetheless. The inventions we shall see are all examples of departures from tradition, but none could have occurred without tradition.

Creative people, then, often look at something from the past that is the result of convergent thinking, and by thinking about it divergently, come up with a novel use of a familiar object. They look in the commonplace to find the strange. Instead of thinking toward old solutions, they think away from them, making the leap from the unexpected to the inspired. Poets do it with metaphors and similes: She was "a phantom of delight when first she gleamed upon my sight." Journalists can do it with garbage. Yes, garbage. It was the first subject we decided to explore because we sensed that it would be a useful vehicle for demonstrating that you can think creatively about almost anything, if you learn how to relate and connect what at casual glance seems odd to couple. In our research we found an Arizona professor, a garbologist, teaching contemporary civilization through what people throw out; a New York artist turning ordinary things off the streets into works of art; and an East Texas sewage plant where earthworms are used to turn sludge into topsoil.

Garbage also helps us to find answers to two basic questions: Why is not convergent thinking enough? Why should we ever need to think or act creatively? Because there are too many anomalies, too many conundrums unexplained and unexplainable within any framework out of which we operate. Innovation is the energy that propels us through the dead-end streets and gets us back on the road again.

One of the reasons for the "creativity quest" of our

Samson Raphaelson (above) wrote *Trouble in Paradise*, directed by Ernest Lubitsch. "After three bad suggestions, one of us had a good one. But we'd never have had it without the others."

Federal Express chief Fred Smith, who lost $29 million at first, says: "Don't ever borrow a little money because you'll have a serious creditor. Borrow a lot and you'll have a partner."

At Conackamack school in Piscataway, New Jersey, students act out a cops-and-robbers scene. They are members of "Olympics of the Mind" team. Getaway man wears roller skates and wings

age is that the anomalies are piling up so fast in this rapidly growing and changing technological civilization that constant innovation is necessary just to stay even. Consumption in a disposable society, for example, has led to such large quantities of waste that we have to begin to look at the problem with new eyes. Similarly, the requirements of the market, together with the shrinking of the arable land as traditionally defined, and the need to be able to feed more people, have led to new ways of thinking about growing tomatoes, even growing them in land filled with salt or—as we discovered—in space.

Anomalies, however, do not explain creativity. They may be a necessary condition but they are not a sufficient condition. The sufficient condition is the creative personality interacting with an environment that transmits certain possibilities.

A life is a particular life; there is no universal ingredient that makes a person creative. We realized

for power. More than 1,000 school teams around the country compete in unconventional problem-solving situations like the one shown above. In background is program's co-creator, Dr. Ted Gourley.

early in our reporting that there may be as many creative processes as there are creative people. And we decided that any full picturing of creativity would require many images. However, the people I met did confirm a number of characteristics which our analysis thus far implies about the nature of creative behavior. Creative people tolerate ambiguity. They possess what the poet John Keats called Negative Capabilities—the ability to be comfortable with mysteries and doubts without "any irritable reaching after fact or reason." They have an unremitting desire to create a satisfying new order out of chaos, and the courage to persist to create that order on one's own terms. This makes them often cantankerous, sometimes exasperating, always unconventional.What matters to them is not what others think of them but what they think of themselves.

They are willing to take "the step beyond"—take risks, strike out on a new path. Samson Raphaelson asked himself as he worked at Sears, Roebuck responding to complaint letters: "Is this all there is?" The question compelled him to rent a typewriter and begin to write, discovering that in a single sentence with a semicolon his imagination could take him from 42nd Street to Peking. Pinchas Zukerman turns down many opportunities to solo in the spotlight of world capitals to be the music director of the St. Paul Chamber Orchestra, where he shares with other artists the satisfactions of small-scale music making and the intimacy of collegiality. Gerald Scheck left his family sheet metal business in New York for a farm where his talent to paint unfolded as naturally as if the unconscious were slipping notes under his door. John Huston's life of perpetual motion, fed by restless curiosity, is reflected in his personality and creativity as a director. Norman Lear broke the mold of prime-time comedy by taking serious issues and turning them inside out, like a jacket, until he found the humor that lines them. Fred Smith, a scion of Southern wealth (entrepreneurs today are no longer all Horatio Algers), risked his fortune to create an integrated network of transportation to serve an electronic economy—a multimillion-dollar idea, by the way, for which he got a "C" when he proposed it in a paper for his undergraduate class at Yale.

Turning on your imagination

Admittedly, these are exceptions. Somehow they kept alive in them that childlike wonder which long into life enables one to see with fresh eyes. The wonder diminishes in many of us as we grow older and fear playing the fool. Filming the nationwide Olympics of the Mind where children are challenged to think originally, I was struck by how the adventuresome unconformity of the very young had been stifled in the teen-agers subject to peer prejudice, and I realized that our task in society is not so much to discover why some people are creative as it is to explore why more of us never use the creativity we possess. Creative people "jump out of line" and are able to remain out of line as they grow older without becoming disoriented. One of the teachers coaching Olympics of the Mind said to me, "To be creative, you have to learn to turn off your judgment and turn on your imagination." If only we could allow the child in us to continue to roam!

Another thing about the people I met: they have powerful egos, a strong sense of self. Two elements seem to be involved. First, someone touched them at an early age and signified their worth, saying: "You matter." Maya Angelou was "vastly loved" by her grandmother. After a terrible childhood ordeal which rendered her speechless for five years, another woman —a "black madonna"—read Dickens aloud to Maya, turned her suffering rage upward, and brought the

poet to life: "She gave me back my voice." Samson Raphaelson received an encouraging letter from an editor to whom he had submitted his first stories, "and I became a person." For the inner life to flourish, everyone needs to be touched by someone.

Yet this strength of ego must have something to do with the need to prove one's worth through independent creativity. It is not surprising for one who has been strongly validated by a powerful person in his or her life to want later to establish an independent identity. Hence, the immense drive to create.

Drive implies discipline. Discipline enables one to follow one's own lights against discouragement and failure. Inventors who seek to market new ideas know that, however ingenious they might be, nine out of ten ideas never make it. Students in the High School of Performing Arts know that the road before them will be difficult and few will ever see their names on a bright marquee. Maya Angelou, in her own words, had everything against her: she was black, Southern, female and poor. Persistence, the fortitude not to give up, the strength to overcome the world rather than to be overcome by it—all characterize the creative person. So does just plain hard work. The fascination with Koestler's "bisociative" flash—the moment of intuitive shock, the point of "Aha!" or "Eureka"—obscures the long years of perspiration leading to the inspiration. The scientists, artists, writers and inventors I know never seem to stop working, even in sleep or reverie.

It is, however, one thing to describe a creative person and quite another to describe the creative process. About the only thing the experts agree on is that creativity occurs when two ideas seemingly unrelated to each other come together in such a way that they create something new, an original pattern of things. The Council of Scholars, for example, in its summary paper, concluded that at the core of creativity is innovation, the ability "to go beyond received patterns and rules." (The paper, "Creativity: A Continuing Inventory of Knowledge," is available at no charge from the Library of Congress, Washington, D.C. 20540.)

Not everything new is creative, of course. To be creative, novelty must prove itself by generating insight; it must help us to see ourselves or the world in a new way. The scales come peeling from the eyes. All of a sudden we see something new, or we see something familiar as if we had not seen it before. With the insight is released energy, which transforms one's attitude and, ultimately, one's behavior. This test of significance redeems creativity from novelty for its own sake.

But how the creative leap happens, how we reach that crucial readiness when our awareness leaps to new ground, remains a mystery to scholar and journalist alike. There has been an explosion of research into the link between creativity and the fundamental biological process, but no conclusions. The psychologist Colin Martindale, for instance, has observed different patterns of brain waves in students challenged to think originally. Certain people, he reports, produce more alpha waves than others when they are assigned a creative task. "They get excited and involved, while less creative people turn suspicious or even hostile" when confronted with a new concept.

Are we born that way, or do we become that way? Research continues too fast for the layman to keep up. Scientists meeting to discuss their theories are sometimes so divided that they remind me of a Democratic Party caucus. But even the most skeptical who might argue that creativity is a word "both ugly in sound and arrogant in nature" also admit that it is inescapable. And my heart leaps at the consensus emerging among some scientists that creative ability—however conceived—can be learned.

A journalist, then, having begun his journey innocently, concludes it humbly. It is not a scientifically certifiable fact that each child born into the world comes with the potential to create. It is rather a statement of faith. But I can think of no declaration more important for America to make. Imagine a society wholly resolved that all of us have the potential to affect the quality of the day. To do this, said Thoreau, is the highest of the arts.

Artist Sari Dienes, who works with anything—here a banana skin—is shown in her Stony Point, New York, studio. "These are all objects I find in the streets," she says, "squishes and squashes. . . . People often accuse me of not being serious. . . . Unless you are serious, you can't afford to be funny."

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Two centuries ago, the pirate Blackbeard roamed the rugged coastline of North Carolina.

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NORTH CAROLINA

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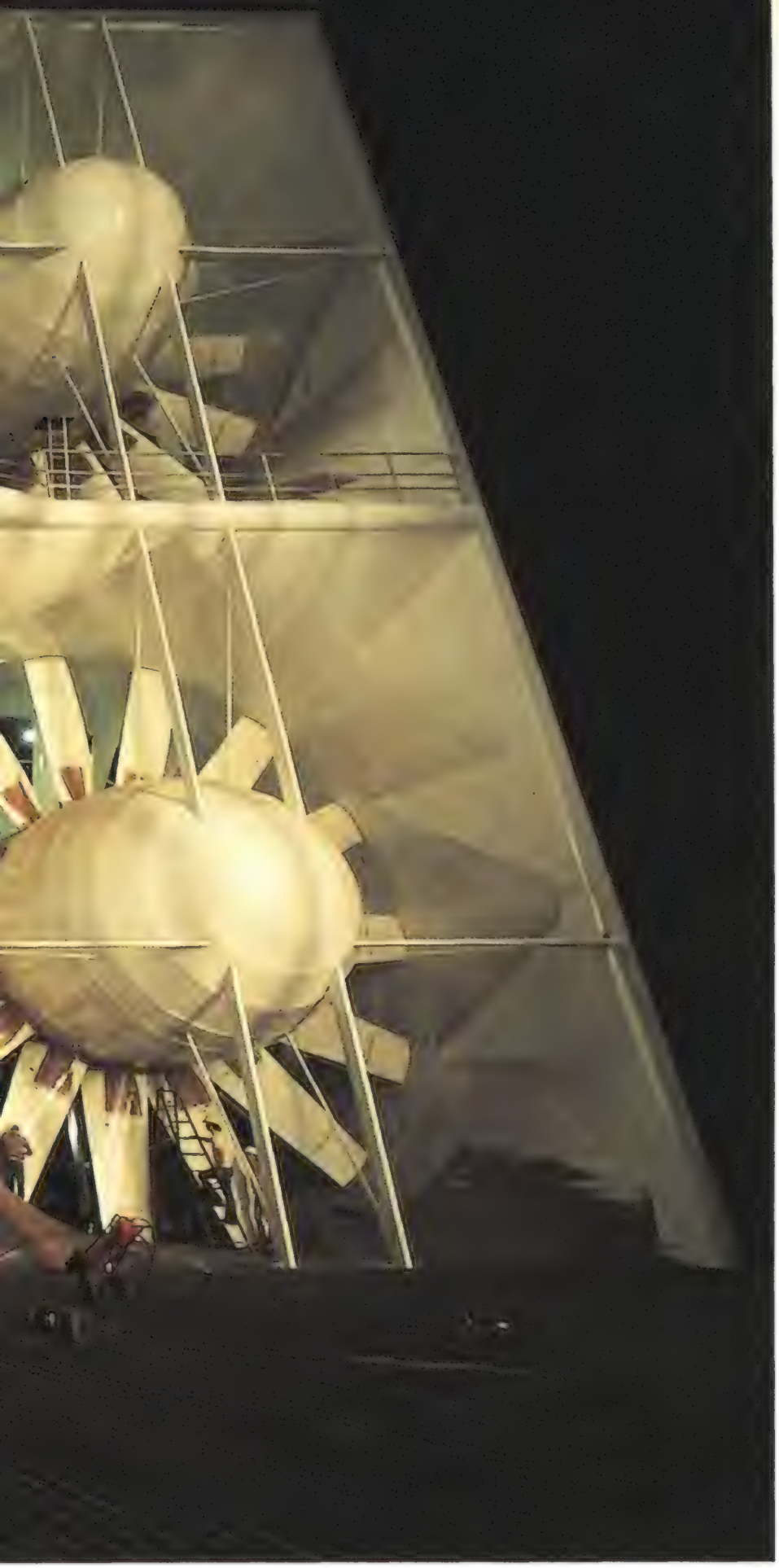
Six 18,000-horsepower engines will run world's largest wind tunnel at Ames Research Center.

By John Saar

Space-Age wind tunnels reshape old notions of streamlining



Ever since the first "whirling arms," aerodynamic engineers have tried to find a perfect design for flying machines

It was always so easy for birds. A fledgling sparrow topples from a branch and in a few fluttering seconds discovers the gift of flight. Lacking the genetic equipment for getting airborne, Man struggled for centuries before the Wright brothers finally unraveled the secrets of flight. From those earliest flying machines to the orbital voyages of the Space Shuttle, Man's tool for the conquest of aerospace has been the wind tunnel. Now there is a new generation of tunnels abuilding. These are structures of a size and complexity which test the imagination. At the Ames Research Center at Moffett Field, California, the National Air and Space Administration is constructing a vast facility to test helicopters and short- and vertical-takeoff aircraft. So huge that it will be visible from space, the Ames tunnel will be the largest in the world when completed this spring (opposite). The yawning new test section, 80 feet high by 120 feet across, will be a womb for aerospace research into the next century.

On the East Coast, at the Langley Research Center in Hampton, Virginia, NASA is building a formidable pressure tunnel which will enable scientists to explore the speed of sound as never before.

The transonic enigma

When you work in the magnificent realm of logic that is aerospace research, when you're used to accurately computing everything up to and including a point in space 100 million miles away to within the mile, the sound-barrier enigma remains an annoying, even embarrassing aberration long after Chuck Yeager shattered it back in 1947 aboard the X-1 "bulletship." Supersonic flight is routine these days for pilots and Concorde passengers. Yet there remains no phase of flight, from Orville Wright's 30-mph lift-off to the 25,000-mph reentry of an Apollo spacecraft, which is more mysterious, more elusive of understanding than the transonic region around Mach 1, the speed of sound (760 mph measured at sea level).

When an aircraft nears Mach 1, shock waves distort the air flowing over the fuselage and wings. The turbulence causes a loss of lift, an increase of drag and a buffeting of the control surfaces which has led to the in-flight disintegration of wrongly designed aircraft. The interaction of these aerodynamic phenomena is so complex that aircraft designers can neither predict it by theoretical analysis, nor fully replicate its effects in ground tests. Ideally, they would like to capture the genie alive by building a monster wind tunnel, a vast and immensely powerful structure in which even a full-size Boeing 747 could be precisely tested in a blast of transonic air. This colossus would cost at least a billion dollars and require a power supply equivalent to that of several aircraft carriers.

Engineers blowing in the wind

New National Transonic Facility at Langley runs at –320 degrees F to simulate supersonic conditions.

NASA's ingenious compromise will deliver the same invaluable transonic data at a fraction of the cost. Under construction at the Langley Research Center, and due for calibration runs this year, is the National Transonic Facility (NTF), the $85-million ultimate wind tunnel (left). For the first time anywhere in the world, U.S. aerodynamic researchers will be able to test scale models in a transonic environment which will yield results exactly applicable to full-size jet transports. Excited by the imminence of this prospect, scientists also see an immediate payback for the rest of us in the design and development of energy-efficient, high-performance jets.

For all its awesome size and hulking strength, the NTF is built with the precision of a Rolls-Royce engine. The main structure is a 500-foot-around rectangular circuit fabricated from six million pounds of stainless steel which must withstand a frigid whirlwind of nitrogen at –320 degrees F and a pressure of more than 130 pounds per square inch. The tunnel's interior gleams with pressure hatches and massive hydraulic machinery for closing off the eight-foot-square test section. One thinks of a submarine by Jules Verne, or Darth Vader's headquarters, the *Death Star*: both are constructed for travel to infernal, inhospitable regions. A model placed in the NTF will "fly" into a cryogenic airstream churned at a maximum speed of Mach 1.2 by a 135,000-horsepower fan.

Key to the facility's success will be the use of nitrogen gas at high pressure and ultralow temperatures. The earliest users of wind tunnels were uncertain how accurately their simulations with models would apply to real aircraft in flight. An eminent English scientist, Osborne Reynolds, proposed in 1883 that such factors as the size and speed of the aircraft, the density and viscosity of the air be combined into a fundamental relationship now known as the Reynolds Number (RN). This number provides a basis for assessing the similarity of flow about the model with that around the full-scale aircraft. As aircraft grew bigger and faster, the RN climbed. Researchers trying to simulate the flight of these planes with models had to match these ever-rising figures as best they could. The NTF exploits an idea that evolved at Langley 60 years ago—that by juggling with the nature of the airstream, raising the density and lowering the temperature, radical increases in the RN are possible. In the new tunnel that veteran NASA researcher Don Baals calls "the big cold one," the juggling will produce exactly the same RN as a large aircraft in transonic flight.

The structure that houses the transonic laboratory

John Saar, a free-lance author, wrote about the recovery of the Mongol fleet in the December 1981 issue of SMITHSONIAN.

Whirling arm was used by S. P. Langley for force tests on airfoils. Illustration is from 1892 report by him.

joins an 880-acre Langley landscape crowded with wind tunnels in fascinating diversity. No two tunnels are exactly alike—and some are positively outlandish—because this is what might be called the Architecture of Spontaneous Necessity. Every tunnel has been hand-tooled to meet the needs and problems of a particular era in the evolution of manned flight. The aerospace and wind-tunnel technologies have advanced in tandem: to build a better airplane, you had first to build a better tunnel. Vintage favorites like the full-scale tunnel known as "the cave of the winds" never seem to outlive their usefulness. Its capacious interior has accommodated countless aircraft over the last 50 years and the tunnel is still booked solid (p. 81). At the other extreme of the size spectrum, there are tiny tunnels with test sections only a few inches square.

One might think that with Man's graduation to flight through the vacuum of space, wind tunnels were on their last breeze. Not so. Usage is, in fact, increasing. The Space Shuttle went through at least 100,000 hours of wind-tunnel research. Boeing's new 767 medium-haul jet was in the wind tunnel seven days a week over many months. And in recent years U.S. automobile manufacturers have integrated wind-tunnel testing into the design of their cars (p. 83). In the past there have been wind-tunnel studies of rockets, missiles, hang gliders, parachutes, airships, a submarine, models of skyscrapers, skiers in search of the perfect downhill posture and birds undergoing metabolism tests.

Behind all the dazzling technology, the NTF is still a wind tunnel—a rejuvenated version of the basically simple device which has vitally aided the phenomenal development of flight in the 20th century. Chances are that the strange and marvelous aircraft destined to soar into the next century also will start out as models suspended a few feet above ground level—in a

Gustave Eiffel, by "honeycomb" of his wind tunnel, helped refine French aircraft for World War I combat.

wind tunnel. These imprisoned winds have served us supremely well. A controlled airflow allows aerospace researchers to explore concepts, study problems of flight stability and detect design flaws. If there are unpleasant discoveries lurking in the plans for a new fighter, far better that they emerge in the safety of the wind tunnel.

Down through the centuries the elusive dream of flight has cost many their lives. If birds could do it so gracefully (and everyone knew the modest dimensions of the avian brain), then surely Man also could take wing. Around A.D. 1000 a bold monk named Eilmer fitted wings to his hands and feet and launched himself from atop a tower. "But," wrote a later 12th-century historian, "agitated by the violence of the wind and the swirling of air, as well as by the awareness of his rashness, he fell, broke his legs, and was lame ever after." Eilmer considered that the omission of tail feathers had caused his crash.

The daunting puzzle of flight challenged the genius of Leonardo da Vinci (1452-1519). Though he never tumbled to the central secret of flight—the lift caused by the difference in air pressure on upper and lower surfaces of a wing—Leonardo sketched a mechanism for ground testing an ornithopter. He also stated the rationale behind wind tunnels with striking clarity: "For since the action of the medium upon the body is the same whether the body moves in a quiescent medium, or whether the particles of the medium impinge with the same velocity upon the quiescent body; let us consider the body as if it were quiescent and see with what force it would be impelled by the moving medium." This "reciprocity theorem," as it is known today, was later validated by Sir Isaac Newton.

Leonardo was stating that it made no difference whether you had the air moving and the model stationary, or vice versa. Experimenters tried posting their trial wings on windswept ridges, but results were unreliable. An 18th-century British mathematician, Benjamin Robins, invented a contraption called the whirling arm. But Robins was able to junk all preexisting theories on airflow and point the correct route for others.

Sir George Cayley is renowned as designer of the first theoretically correct airplane, and the father of flight. Working from his extensive whirling-arm re-

Laser beam in Langley's 16-foot transonic tunnel measures the local air velocity of this model.

search, he built a glider in 1853. This machine was launched across a valley with his coachman at the controls. The fellow landed safely, although he had no desire to pursue a test-pilot's life. "Please, Sir George," he quavered, "I wish to give notice. I was hired to drive, and not to fly."

It was a marine engineer fascinated by aviation, Francis Wenham, who built the world's first wind tunnel at Greenwich, England, in 1871. Twelve feet long, powered by a steam-driven fan, this rudimentary machine swiftly validated the future of aviation. Measuring the lift abilities of his test wing, Wenham found a far higher lift over drag ratio than previously suspected. Powered flight was definitely possible!

Before their historic flight, Wilbur and Orville Wright built a small wind tunnel in their Dayton, Ohio, bicycle shop and tested the lift potential of approximately 200 airfoils. Orville was convinced they were on the right track, writing that "our tables of air pressure which we made in our wind tunnel would enable us to calculate in advance the performance of a machine." At Kill Devil Hills, North Carolina, on the morning of December 17, 1903, the Wrights achieved

Nation's only active vertical-axis "spin" tunnel, simulating behavior in a tailspin, is at Langley.

"Cave of the winds" is old standby at Langley. Since 1931, it has tested planes, rockets, subs and cars.

Shock waves produced at supersonic speeds, and flow lines showing changes in air density, are shown in schlieren photograph of Langley shuttle test. Model is in tunnel that simulates speeds up to Mach 4.6.

their dream—a 12-second flight into a stiff headwind.

The United States was astonishingly slow to capitalize on the Wrights' magnificent achievement. In 1901, Albert F. Zahm, a Catholic University professor in Washington, D.C., had constructed a fine tunnel, but no one in authority cared when lack of funding killed the project. In the armed camps of Europe there was quicker recognition of the military importance of the airplane. By the outbreak of World War I, wind tunnels were operating on both sides for crash fighter-design projects.

Gustave Eiffel, an accomplished bridge builder and designer of the Parisian landmark, was also drawn to the glamorous new field of aeronautics. Dropping models from his tower in air-resistance experiments led him into wind tunnels (p. 79). Eiffel's 1912 facility at Auteuil was the fastest of its time with an airflow of 130 feet per second. He was a serious researcher and his advanced development work on airfoils significantly contributed to French aircraft during World War I. Eiffel concluded that wind tunnels could substitute the judgment of the engineer for the intuition of the mechanic.

Lacking funds, tunnels and a national commitment, American aerodynamic research languished far behind that of Europe. Congress made a tardy move to close the knowledge gap in 1915 by creating the National Advisory Committee for Aeronautics (NACA), forerunner of NASA. For the first national test center sited near Hampton, Virginia, an auspicious name, Langley Field, was chosen. Samuel Pierpont Langley (1834-1906) was a leading researcher of the whirling-arm era (p. 79). It is tempting to focus on Langley's splendid failures: two vaunted airplanes—Langley called them "aerodromes"—were launched with great fanfare from houseboats on the Potomac River, only to sink instantly. However, Langley was an eminent scientist, Secretary of the Smithsonian and an avid believer in powered flight.

Langley Field's first wind tunnel, completed in

1920, rated somewhere between mediocre and disappointing, but it was a start. It was a German-born aerodynamicist named Max Munk who 60 years ago proposed juggling the factors in the Reynolds Number equation—the principle now being utilized in the transonic tunnel. By pressurizing a NACA wind tunnel, Munk was able to obtain data of much-improved caliber. The variable-density tunnel only ran at a humble 50 mph, but the airstream was pressurized to 20 times atmospheric pressure and revealed priceless information about airflow patterns. A keystone report on airfoils which came out of Munk's tunnel guided the design of such successful planes as the DC-3 and the B-17 Flying Fortress.

The slotted-wall solution

Wind-tunnel discoveries came rapidly, one on the heels of another, dictating changes in the shape and function of airplanes in a constant quest to raise the lift values and lessen drag. Retractable undercarriages and engine cowlings, for example, were introduced after Langley proved beyond any dispute that dangling landing gear and the protruding cylinders of air-cooled engines were inflicting huge drag penalties.

In the late 1940s, flight and wind-tunnel research was bumping up hard against the sound barrier. Yeager's X-1 flight silenced the "square Earthers" who believed Man would never fly faster than sound, but the feat was accomplished with the rocket-powered brute force of an experimental airplane. Production fighters like the Convair YF-102 were supersonic on the drawing board. In the air? No one knew for sure. The usual wind-tunnel trailblazing was missing because wind-tunnel models also stubbornly refused to be tested in the transonic region. In the Mach 1 region, shock waves formed on the model and extended far out into the flow field around it; further, the reduction in flow area caused by the model's presence quickly accelerated the mainstream flow to sonic velocity. Regardless of how much power was applied, the tunnel "choked" and spat out unreliable transonic data. The breakthrough, as so often before, came on the ground. Langley scientists designed a slotted-wall tunnel (p. 80) which allowed the streamlines to flow around the model almost as if the wall weren't there.

Richard T. Whitcomb was 31 years old, brilliant, intuitive, a loner. While he understood the theoretical analysis in which colleagues were immersed, his instinct was to explore airflow where he could see the results—in the tunnels. In 1952 he tested the YF-102 in the slotted-wall tunnel and took schlieren pictures of the shock waves. This technique employs bright lights and lenses, and yields clear and tremendously informative pictures (p. 82). Whitcomb realized that drag generated by the shock waves was much worse than expected. He predicted that the YF-102 was insufficiently powered to go supersonic and, to Convair's dismay, first tests of the prototype proved him right.

Then came the moment of pure discovery which changed forever the shape of supersonic aircraft and assured Whitcomb a place among aviation's prime innovators. "Suddenly it dawned on me—it was like a light bulb flashing on—the flow around the airplane and the resultant drag was surely related to the cross-section area of the total airplane." Whitcomb's "Area Rule," in essence, stated that a plane's cross-sectional area should not vary abruptly from nose to tail. When the YF-102 was given the "flying-Coke-bottle" modification recommended by Whitcomb, it pierced the sound barrier while climbing, and showed a 25 percent increase in maximum speed.

Man's first venture into space was conducted under the evil stewardship of Adolf Hitler. In 1942, the Nazi leader's first V-2 ballistic missile went diving into England at approximately Mach 5, 3,400 mph. When the German rocket test facility at Peenemünde was captured, the Allies were shaken to find a Mach-5 wind tunnel, and plans for a Mach-10 tunnel—intended to test the missile targeted against the United States.

The extraordinary difficulty of devising Space-Age tunnels to simulate hypersonic (above Mach 5) and hypervelocity speeds (characteristic of reentry) tested NASA to the utmost. And if the demands of speed and temperature taxed the imagination, some of the NASA solutions read like inventions of science fiction. By 1949, scientists at the Ames Research Center were achieving high Mach numbers by firing test models

Colored smoke in test performed by Chrysler shows airflow patterns over full-size Plymouth TC3.

up a supersonic tunnel. When the gun fired the model upstream into the teeth of the supersonic blast, high relative speeds were reached and recorded in shadowgraphs. Later the technique was improved to explore the reentry ordeal of a spacecraft—speeds up to 25,000 mph. This time the scientists fired the tiny models into onrushing slugs of gas from a controlled explosion. For the briefest of moments, the effects of a joint speed of 44,000 feet per second could be registered and photographed at an exposure of only a few billionths of a second.

These exploding wind tunnels reached their zenith in 1965 with the Voitenko compressor, the invention of a Soviet scientist. A thin glass tube directs the gases generated by a powerful explosion at the truly incredible speed of 220,000 feet per second. The whole apparatus is destroyed, of course, but by then the experiment is complete and protected cameras have photographed the encounter.

Despite all this creative experimentation, NASA researchers cannot replicate exactly the vast speeds and temperatures of reentry in ground facilities. However, by interlocking results from thousands of these brief tests, they have been able to extrapolate accurately the requirements for safe return from space.

There are now some 250 active tunnels in America, and approximately 50 are major facilities, many of them transonic precursors of the Langley NTF. Aircraft manufacturers swear by them, university aerospace departments can't do without them. And now Detroit, too, is cupping an ear to the knowing wind. Content for decades to turn out aerodynamic elephants which guzzled their way down our highways, the automobile manufacturers became more mileage minded when gasoline became a valuable commodity. Wind-tunnel testing of cars is in its infancy, but the "wind cheaters" that are now showing up in the showrooms prove that a serious shift to aerodynamic design is under way.

The drive for better fuel economy brought Detroit's designers into the tunnels. In 1973, year of the oil crisis, General Motors did a meager 300 hours of wind-tunnel testing. By 1979, tunnel time had leaped to 2,600 hours. Last year GM cranked up the 43-foot fan in a lavish new tunnel. Tom Kolhoff, manager of the company's aerodynamics laboratory, explains: "When gas was 17 cents a gallon, there was far less motivation for good aerodynamics. Now it's become an integral part of the designer's discipline."

Cars of the 1980s and '90s will be sleek as racing cars are today, but other design considerations will limit the search for aerodynamic perfection. The same passenger and baggage space has to be "packaged," the interior must have air for cooling and heating, noise and dirt accumulation are also factors, and, above all, the design has to attract buyers.

The computer, of course, has had a revolutionary impact on wind-tunnel testing. The most advanced NASA supercomputers can handle up to 140 million operations a second. These plucky little gadgets can do in 30 minutes tasks that would have kept a 1960 computer busy for 30 years. Enter the electronic wind tunnel and computational aerodynamics—the theory that computers may reach a speed and sophistication enabling them to forecast mathematically the performance of a hypothetical aircraft. No more wind tunnels? Yes, no and maybe. NASA is moving toward that goal, but even the best existing computers are inadequate for complete flow prediction. Theorists believe it would take a computer with a capability of one trillion operations a second to untie the Gordian Knot of equations and variables that make up the phenomenon of flight.

Aerodynamic research has changed the way we feel about streamlining—the popular notion which was the first most of us heard about airflow efficiency. Back in the 1950s, streamlining meant a car as curvy as Jane Russell, and an airplane as sleek and slinky as the Super Constellation. Those designs are gone with the wind tunnel—obsolete and antediluvian in terms of modern aerodynamics. Classroom flight research long ago established that paper airplanes did the best with swept-back wings, and sharply angular lines. It is an amusing irony that today's supersonic aircraft have that same rakish look—the delta-shaped wings sloughing off shock waves much as those paper darts dealt with boredom.

F16-E fighter plane, tested in Langley tunnel, has delta-swept wings to increase fuel efficiency, payload.

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Steinway & Sons

By Randy Sue Coburn

Wonderful wizard of 'wild things' now turns to opera

After creating best-selling children's books that mingle the incredible with the real, Maurice Sendak is trying out a new career

For the last 30 years, it has seemed as though Maurice Sendak knew his place—the children's section of bookstores. He certainly had every reason to be happy there, where the eye-rolling, teeth-gnashing monsters of *Where the Wild Things Are*, his Caldecott Medal-winning picture book, published in 1963, still exercise considerable power. While some adults failed to take Sendak seriously enough to suit him, the ones in his field recognized the beauty and insight of his work by bestowing many honors. Everything seemed fine.

But, as in most children's stories, appearances are deceptive. After illustrating some 70 volumes, 12 of which he also wrote, Maurice Sendak became restless. And now, as a result, he's showing up in very different places—the sort that even the most stodgy adult must recognize.

In the competitive world of opera, Sendak's sets and costumes for Mozart's *The Magic Flute* and Janáček's *The Cunning Little Vixen* convinced critics that, if he cared to, Sendak could forge yet another outstandingly successful career. His interpretation of Prokofiev's *The Love for Three Oranges* has been slated for the 1982 spring season at England's lovely Glyndebourne Opera House, a setting most designers achieve only after years of work.

Sendak's friends are toy personages from *Where the Wild Things Are*: Bull, Main Guy, Bird Lady.

Photographs by Enrico Ferorelli

Meanwhile, Sendak's latest picture book, *Outside Over There*, surpassed the traditional boundaries of children's books to the extent that *Time* magazine called it "the most unusual novel of the season," never minding that it contains only 351 words.

Last fall, the elite Pierpont Morgan Library displayed Sendak's designs for *The Magic Flute* and his sketches and drawings for *Outside Over There* with the work of Blake and the manuscripts of Mozart. Those who sniffed at this lineup, as if Sendak were an uppity pretender, generally left his exhibit convinced of the connections that allowed this child of Brooklyn, this "children's book author," to keep such exalted company.

Perhaps the most obvious indications of Sendak's heightened presence these days are his appearance in an advertisement for videotape and the new line of "Wild Thing" toys he designed. These commercial ventures Sendak dismisses with equal measures of enthusiasm and cautionary utterances, pertaining mainly to hype and our fickle society. At 53, an age his ever-accessible childhood frequently belies, Sendak is hardly disoriented by this spate of attention.

"I enjoy what's happening now," he says, "but it's accrued over such a long time that I don't feel it the way people imagine I must. I'm more visible now, that's the only difference. And I may be invisible again, or things may be permanently different—I really don't know. My main worry is to make *Oranges* a good opera. I can only think about that."

How children master problems

It is characteristic of Sendak to be completely obsessed by his work of the moment. The more personal Sendak's books became, however, the longer he took to complete them, a luxury he earned and could well afford. He spent five years developing and executing *Outside Over There*, which he considers his major statement on a theme he's articulated for most of his career: how children master problems like danger, jealousy, frustration and boredom. In *Outside Over There*, Ida is a classic Sendak heroine, exercising considerable imagination in both eliminating *and* rescuing her baby sister. Sendak reveals his German Romanticist roots in pale, elegant paintings quite different from the crosshatched drawings that had come to be identified with him.

For all of his current departures, though, it is easy enough to find the thread in Sendak's work that led him to the theater. Many of his characters have been compulsive actors. In 1967, Sendak immortalized Jennie, his aging Sealyham Terrier, in *Higglety Pigglety Pop! or There Must Be More to Life*. At the end of the tale, the longest of Sendak's prose works, Jennie

Maurice Sendak turns to opera

Copyright © 1981 by Maurice Sendak

Illustration from *Outside Over There* shows heroine, and her magic horn, spellbinding goblin villains.

Sendak's other friends include his dogs, which keep him company and have appeared in his books.

stars as the dog who swallows the mop in The World Mother Goose Theatre's rendition of Samuel Griswold Goodrich's nonsense rhyme. In *Where the Wild Things Are*, Max, clad in his wolf pajamas, precipitates a fantasy, stimulated by his anger, which transforms his bedroom into a jungle and gives new meaning to the notion of "acting out." Then there's Rosie, of the 1960 *The Sign on Rosie's Door*, who's forever dressing up and impersonating theatrical figures of her imagination. Rosie appeared in a 1975 animated television special, *Really Rosie, starring the Nutshell Kids*, which was recently reincarnated as an off-Broadway musical with a cast of children; Sendak wrote the libretto and lyrics for both productions. As Sendak says, "I think the theater was always hovering."

Since opera deadlines mean more travel and less time to work, even Sendak's dogs—two German shepherds, one of which appears in *Outside*, and a golden retriever—show signs of feeling neglected. In rural Connecticut, where he lives in a sprawling house, part of which dates back to the late 18th century, Sendak's days are rigorously divided into work, which is generally accomplished to a constant stream of music, and retreat and exercise—which is why he suggests his Greenwich Village apartment as the best place for an interview.

There is now slightly more salt than pepper in the beard Sendak grew ten years ago, while he was illus-

Randy Sue Coburn is a Washington free-lancer who wrote feature stories for the Washington Star. *She is an ardent fan of Victorian fairy tales.*

trating his impressive two volumes of Grimms' fairy tales, *The Juniper Tree and Other Tales from Grimm.* Still, the most obvious reminders of Sendak's age are his constant references to growing up in the Thirties and Forties. At the age of six, Sendak made his first color drawing—a portrait of Mickey Mouse who, as it turns out, was also six at the time. Since then, Sendak has acquired an impressively extensive collection of Mickey Mousiana.

His books on psychiatry, perhaps more pertinent to the city than the country, fill an entire case in his Village apartment. Like Sendak's own books, many concern children's dreams; it is somehow appropriate that a man who's been an insomniac since childhood should find the mind's night life so inspiring. With the trilogy (*Wild Things, In the Night Kitchen* and *Outside Over There*) that most clearly illuminates Sendak's work to date, his dreamy sublimations grow increasingly deft. *The Magic Flute* was a fitting introductory operatic vehicle for Sendak in many ways, among them its phantasmal aura and faith in childlike wisdom. Its main attraction for Sendak, however, was the genius, the "intense quality," of Mozart's magnificent music.

It's almost always noted with some surprise that Sendak is childless (in fact, he has never been married), although his most fertile source has always been vivid memories of his own sickly childhood. "I like being honest with children," he says, "about the things I wish *I* had known, consoling them in ways most adults don't realize they need, because most adults don't credit them for being densely complicated creatures."

Philip and Sadie Sendak came to America from separate Jewish villages, both outside Warsaw, just before World War I. Maurice, the youngest of their three children, was "practically a live doll" to the much older sister whom he idolized. Not surprisingly, he suffered certain indignities at her still childish hands, but he also benefited from attention his mother was too busy to give. His sister, for instance, would patiently sit in the dusk with him, not leaving until he finally fell asleep. Her link to Ida is obvious. Not a few of Sendak's adult preoccupations, though, also worked their way into *Outside Over There.*

When he began illustrating the book, he had already been approached by director Frank Corsaro, his opera mentor, to design the sets and costumes for the Houston Grand Opera's production of *The Magic Flute.* And so, in one illustration for the book, Mozart appears at work on his music in a small cottage. Just like Prince Tamino in *The Magic Flute,* Ida charms her enemies with a magical instrument and, when she's on her way home, three children lifted whole from the opera point the way to safety. "I was at the drawing table," Sendak explains, "wishing it to happen." For him, the most thrilling aspect of designing for the Glyndebourne is that it was built specifically for Mozart operas.

In chronicling Sendak's influences, the Morgan Library displayed a letter Mozart wrote to his father in which he described death as "the best and truest friend of mankind." The letter now belongs to Sendak. While he seems to share such sentiments, he shies away from analyzing why so many of his inspirations—in-

Sendak set for Mozart's *The Magic Flute* was designed for production of Houston Grand Opera.

cluding the poet, storyteller and dramatist Heinrich von Kleist—bloomed in the late 18th and early 19th centuries. "I just feel I belong there," he shrugs. "My nose tells me that's where to go and that's where to sniff and," he adds with a decidedly wild "Maxish" grin, "that's where to steal."

That Sendak, the first American recipient of the Hans Christian Andersen Awards' Illustrator's Medal, should refer to his work as theft is less a reflection of his self-esteem than his lifelong personal distaste for traditional schooling. Believing himself a teacher at heart, he has used such terms instinctively to calm the anxieties of college-age students, whom he has frequently instructed. "What I take, I transform," he says, "but basically, borrowing is how you learn. I want younger people to be comforted by thinking, 'Oh wow, he does that, too.' Even if you go to a fancy art school [Sendak did not], what you do is fall in love with other artists, past and present."

While still in high school, Sendak worked afternoons and weekends for All-American Comics, adapting Mutt and Jeff strips for comic books. Although his father, a dressmaker, could afford to send him to college, "to me, graduating from high school meant I could legitimately and legally stop this torture." Soon, he was working in the warehouse of Timely Service, a Manhattan window-display company, constructing, among other things, papier-mâché and plaster models of fairy-tale celebrities like Snow White and the seven dwarfs. A couple of years later he was designing windows for F. A. O. Schwarz. In 1951, he illustrated his first general children's book, Marcel Aymé's *The Wonderful Farm*. His future in the field was assured the following year when he illustrated Ruth Krauss' popular *A Hole Is to Dig*.

From there, his work developed to the point that his admirers, unable to find the likes of him in contemporary times, conjure up the Victorian English artist Randolph Caldecott for purposes of comparison. If anyone is happy that Sendak is away from publishing for a while, it's probably the children's librarians who objected to *In the Night Kitchen* because as Mickey, the young hero, falls out of both his bed and his pajamas, he's revealed to possess a penis. But by now, so

Set for *Really Rosie*, musical based on book *The Sign on Rosie's Door*, is embellished by author himself.

many adults and children alike have responded to Sendak's vision that his longtime wish for an ageless audience *almost* seems practical.

As an adult, one of Sendak's recurring nightmares is that he's forced to take a Regents exam. It's plain that competition ruined school for him and, at this late date, he's not about to compete with his past successes as an author-illustrator and agonize over what his next book might be. It doesn't take the analyst whom Sendak has periodically consulted, however, to see that his anxiety is kept at bay chiefly by working at art that makes personal sense to him.

All of which is not to say he doesn't have a new book theme on the back burner. "But I really have to let it cook," he insists. "Happily, I'm working on something I love, so I needn't worry if it thickens, spills over or dries out. And if in the interim I kick the bucket, it's no loss. Nobody will have heard of it or seen it."

Whenever Maurice Sendak thinks life is awful, and he frequently does, he reminds himself how much better the second half has been than the first. Then he might well laugh. One, of course, has everything to do with the other.

By Vaughan A. Langman

Giraffe youngsters need a little bit of maternal love

World's tallest mammals have a reputation for being poor parents, but recent research indicates that mother knows best after all

Science does not always advance in straight lines, and indeed there are times when what you see along the side of the road may be more significant than where you are heading. I learned this when I went to southern Africa to do my doctoral dissertation on one of the many fascinating small mammals that inhabit this area. However, after only a short time in Africa, I became interested in giraffes. When you observe giraffes closely for a long time, you cannot help being impressed by the height, body size and grace of these animals. I began to wonder if evolving to become the world's tallest creature hadn't created as many problems as solutions. When I looked through the literature to learn more about them, I found that scientific papers described a very unusual social system and an even more unusual physiology.

Scientists described giraffe cows as very poor mothers who abandoned their calves only one month after birth, leaving the inexperienced calves without protection at the most vulnerable time of their lives. I wondered how these young calves found food and avoided being eaten by lions. As I further researched these questions, I surmised that this poor relationship between the giraffe cow and her calf must have had a very special reason for evolving, because no other hoofed animal leaves her young so quickly after birth.

Another interesting problem was posed by the size of the giraffe. Many scientists have long wondered how the very large land animals such as the giraffe, rhino, hippo and elephant manage to stay cool during the long, hot African days. It is known that they cannot pant like a dog, because they would generate more heat moving air up and down in their large tracheas than they would lose. Most scientists believe that if large animals like giraffes sweated like humans to cool off, the enormous water loss would keep them from moving very far from water. Also, all of them would be in great danger of dying during a drought.

My fascination with the giraffe grew until I decided that I wanted to be the one to solve some of the problems I had uncovered. I began with a giraffe-watching schedule that I was certain would allow me to solve all of the problems I had posed within a year, leaving me with time to write up my work and perhaps provide new questions. However, as is usual with young, enthusiastic students, I soon learned I had underestimated the problems. The answers I desired were neither so simple nor so easily discovered.

My giraffe watching was not working because I had planned to recognize a large number of individuals by their spot patterns. However, when I actually became familiar with one giraffe after following it for several days, it would disappear into the dense bush and I wouldn't see it again for several weeks. This was very confusing; I never got to know any one giraffe well enough to be sure what part it played in giraffe society.

Radio collars for giraffes

The only solution seemed to be capture the giraffe I wanted and put a radio collar around the base of its neck—a simple enough solution if you know how to make a radio collar for a giraffe and if you can think of a way to get it around the neck. These two problems turned out to be major undertakings which were neither simple nor safe.

If you start to design a radio collar for a giraffe, you have several things to think about: the transmitter must be strong enough not to be destroyed if the giraffe pushes against it; the collar must be designed to avoid damaging the skin underneath; and finally, the Game Department didn't want the collars to stay on any longer than the duration of the study. The first problem was solved by embedding the transmitter in strong fiber glass; the second, by gluing a piece of soft horse blanket to the bottom of the collar. A plan to make the collars fall off after two years was much slower in coming. Finally, the two ends were connected with brass bolts which, it was hoped, would wear through in about two years.

Side by side, month-old giraffes signal alarm by standing motionless, awaiting mothers' return.

Resolving riddles of giraffe behavior

Ears forward in attack posture, a giraffe cow is prepared to defend her newborn calf (left). Unless

The capture of a wide size range of giraffes presented the most difficult challenge. Capturing any animal in the wild is very difficult and can be dangerous both to the animal and the captors. Giraffes are perhaps one of the most difficult wild animals to capture. Because of their large size (1,500-3,000 pounds), unusual shape and very delicate physiology, careful advance planning is required.

A giraffe, unlike most other animals, is totally reliant on its head and neck to rise from lying on its side. In order to get off the ground, it must throw its head and neck toward its legs and use the force of the throw to bring it to its stomach. To come up to a standing position requires another throw of the head and neck, this time back toward the tail; once again it is the momentum of the head-neck throw which makes it possible for a giraffe to stand. Therefore, when using tranquilizers to capture a giraffe, the dosage must be just right so that after the collaring has been completed, the giraffe can assume a standing position. Without the right dose, the animal can't stand and, because of its immense size, no matter how many men are there, they can't lift it to its feet.

It took six months of traveling and working with many veterinarians and wildlife-capture experts before I hired 12 men and set off to collar my giraffes. My plan was very simple: I would go out and capture one male and one female of each age group and follow them daily until I had spent 300 hours actually observing them. I would leave them, then capture other giraffes and begin all over again, checking on the first giraffes every week. I hoped that this approach would give me detailed knowledge of these particular giraffes and an idea of the general behavior of the various age groups.

The capturing and collaring worked extremely well and I was able to begin trying to unravel the mystery

Hidden by foraging mother, camouflaged by spots, a baby giraffe naps with head tucked under its rump.

Two baby giraffes nuzzle companionably in their nursery herd; at a threat, adult runs, young follow.

skulking hyena turns tail, she will snort and leap forward, her hooves flailing. Ferocious attack can kill.

of the abandoned calves reported by other researchers. Every morning at six o'clock, Ephram, a Tsonga game guard who worked with me throughout my stay in Africa, and I would go out in the Land Rover and locate the position of the giraffe we were watching at the time. We would stay with that giraffe all day and return to camp at dusk.

At first, the observations were confusing and many times boring. I didn't know how to tell the difference between individuals from a distance, and the behavior I observed seemed random and disconnected. However, as time went on, I could recognize individual giraffes by their distinctive walk, head shape and horn configuration. The events I observed began to become a part of a daily routine in which a number of animals played a role. Gradually I came to know my giraffes and their associates so well that it was like watching a movie serial that is continued every day.

Now leaving camp in the morning was exciting, and I couldn't wait to see how the story or series of events would turn out. Where would our giraffes go today? What other giraffes would be encountered on the way?

My continuing observations made clear that the first written reports of giraffe cows leaving their calves one month after birth were wrong. The claim in those same reports that giraffes were poor mothers and that the bond between cow and calf was very weak was also in error. What the first giraffe observers had seen is a phenomenon which is common in nature but carried to an extreme in giraffes.

There are two basic plans that hoofed animals have adopted for the care of their young immediately after birth. The first is called "following." Animals that are "followers" give birth to a calf which is immediately able to follow the mother. A good example of a "follower" is the wildebeest: after the calf is born, it immediately gets to its feet and walks around and, shortly afterward, follows the cow and, with her, begins following the herd. This behavior is advantageous for animals that move with large herds. It keeps the cow and the calf within the herd's protection.

The second plan is called "hiding." These animals hide their young immediately after birth and keep them hidden until they are capable of moving with cow or herd. This group includes the giraffe. There are several possible reasons for hiding a calf immediately after birth. The calf may not be able to follow the cow and her herd immediately after birth and may require a week or more of development to escape being eaten. The isolation time for other animals of the same species may also be essential for imprinting

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Poised to investigate unfamiliar object, bull will approach, snort, circle until he is satisfied.

mutual recognition between the calf and the cow.

Giraffes follow all of the basic rules for being "hiders"—except that they extend the hiding period. Immediately after birth, the giraffe cow moves her calf a short distance to an area of safety. Here the calf is completely isolated from all other giraffes for a period which may last as long as a month. During this time, the calf stays in the area, lying down and moving very little. The cow returns two to three times a day to allow the calf to nurse. She may go up to 15 miles away from the hidden calf for water or food. The calf waits for her to return, but will not run to her immediately. Instead, it lets her inspect the area and will nurse only after she has nudged it and licked its neck.

Most other hiders stop hiding their calves after a relatively short period of one to four weeks; then the calf begins following the cow, continuing this pattern until it approaches maturity. However, giraffes are exceptions to this general rule. Over an extended period they hide their young in groups and provide "baby-sitting" services.

Watchmen and baby-sitters for the young

During the early morning, the giraffe cows with their calves will move to special areas that are used repeatedly by nursery herds. They all eat together for a while, and then the cows leave one by one. Soon only the calves remain; they lie down or nibble trees very near to where they were left. Two or three times during the day each cow returns to the nursery group and lets her calf suckle. The cows will then leave again, but at the end of the day return and stay with their calves to protect them during the night.

At night the nursery herd maintains one or two giraffes as watchmen to ensure that lions cannot approach unnoticed. They change watch regularly so that no giraffe is on duty all night. This is accomplished without a sound and without any apparent plan. The animals gather in a relatively open area at dusk and as night approaches most of them lie down with their legs folded under them, curl their necks around and place their heads on their rumps to sleep. However, when the one or two that remain standing and watching tire, they lie down and others spring to their feet and assume watch.

Next morning all of the giraffes travel to an area similar to one where the calves were left the day before; and just as before, the cows begin to leave their calves and travel to feeding areas. However, this time not all the giraffe cows leave; one mother remains behind with all the other calves. Yesterday's hidden group of calves becomes a calf pool with one mother as the baby-sitter. How that giraffe cow becomes sitter for the day is not clear. At first glance it seems so

Tangle of giraffes includes two bulls (square horns), three females and, in background, three juveniles.

Giraffes must spraddle to drink. Arterial valves protect them from fainting when head rises quickly.

planned that you think each cow takes turns. It is more likely that the baby-sitting cow feels no urge to drink or seek out special feeding areas and simply stays behind because she lacks a motive for leaving.

Why should this particular baby-sitting arrangement be any different from the group hiding described earlier? The feature that makes it special is the behavior of the giraffes if they are threatened by a predator or an observer. When unaccompanied by adult giraffes, the calves, when frightened, will run off together, always circling to get back to the original area. With one giraffe mother present, the situation changes; she is usually the first to see or hear the threats. She becomes very nervous and goes to her calf and begins to nudge and push it to make it follow her. The other calves see the nervous mother and also become nervous; when the cow finally runs, her calf, as well as all of the others, follows her. The cow which intentionally moves away to save her calf is unintentionally saving all of the others as well. Therefore, this behavior may be very important to the survival of the calf groups and would be encouraged by evolution.

How do young giraffes keep cool?

The original mystery of the abandoned calves was solved by watching them for longer periods of time. However, a new question now haunted me: if I were right in what I had observed, why do giraffes have such a long period of hiding? It didn't seem to make sense; why would they evolve a system that left the young hidden and relatively inactive for periods of as long as a year? None of the other species that are listed as hiders keep their young hidden for more than one to four weeks.

I didn't have any clues and I didn't know where to look. It seemed that my study, like so many others, was doomed to end with as many questions as answers. Then one night during dinner around our campfire a friend who was visiting asked me how giraffes managed to drink water. I carefully explained how a large bull giraffe I had seen at the river bent over to drink, assuming what looked like an awkward position. He was very much interested in this information, and asked if the young giraffes drank water in the same way. I thought for a moment and then I realized I had never seen a young giraffe drinking. I immediately planned a long series of observations around water holes to see how many young giraffes came to drink. My friend (now coauthor of this new idea) suggested we should also watch the watering areas at night to make sure the young weren't coming quietly to have an unobserved drink. We saw none.

I decided that the ability of young giraffes to go without water, using only the cow's milk and what

Measuring temperature of exhaled air, Dr. Langman investigates this giraffe's heat regulating system.

Attaching oxygen mask so young giraffe's metabolic rate could be recorded required a 16-foot climb.

little water was present in the leaves they nibbled, must somehow be connected with their unusual hiding period. I had to have more specific information on giraffe physiology, and particularly on how a giraffe maintains its body temperature and how often it needs to drink. I wrote to all of my colleagues in physiology asking for more information and inquiring about the possibility of catching giraffes and holding them in pens for these measurements. Finally I received a reply from Professor G.M.O. Maloiy, a world-famous African physiologist, who was also interested in the physiology of large African mammals and in particular the giraffe. With his help and support I was off to Kenya to begin a study which I hoped would solve my new riddles.

It wasn't easy convincing a great many people whose help we needed that we were serious about catching six to eight giraffes ranging in size from 400 to 3,000 pounds and training them to help me solve my problem. Finally, however, Professor Maloiy and I built a field station at Athi River, a small town 20 miles east of Nairobi, and we hired three men to become the first staff members. The giraffes were captured within sight of the field station and the long pre-experiment training period began.

Giraffes are too large and too dangerous to push around, so they had to be trained to walk into the holding area where I planned to make my measurements. At first they would go in and we would simply push a log behind them to stop them from leaving. It was only a short time, however, before they made the connection between us and the log and when they saw both together, they wouldn't come anywhere near us. So we decided to hide the log and ourselves behind the food barn and jump out to close the gate once the giraffes were inside. Again, all worked well for some time and we thought that we had outsmarted them and developed a technique that would continue to serve us. But giraffes are not easily fooled. The day came when the presence of all of us anywhere near the

pens was enough to make them suspicious, and none would go in until we had given up and gone away.

All seemed lost! Our giraffes had become so wise and so used to our tricks that we were no longer able to catch them. Then Hassan, the field station manager, said that he was convinced giraffes couldn't count. His plan to prove this was for all of us to assemble near the pens and then all but one of us would leave, and when the giraffes went into the holding area, the remaining fellow would close the gate. Well, it seemed unlikely, but it worked. Apparently none of the giraffes ever learned to count, and we were able to use this technique successfully for the next two years.

My experiments with these animals showed that, like the camel, the giraffe allows its body temperature to fluctuate three to ten degrees C every day. By not rigorously controlling its body temperature—which other animals do by sweating or panting—the giraffe and camel save an enormous amount of water. The adult giraffe heats up very slowly during the day, allowing it to use the camel's trick of passive heating and cooling for water conservation.

For an animal to be successful without controlling its body temperature it should weigh as much as possible. If an animal moves around under the hot African sun all day and expends little or no water to cool, it should weigh from 600 to 3,000 pounds. Such a creature will heat up very slowly and be able to avoid using precious water for cooling.

That rule works well for adult giraffes, but what about the young? When I started working with small giraffes, I thought they must have a cooling mechanism different from that of the adults. They were so much smaller that I expected them to sweat or pant to cool. However, I was wrong again! They showed the ability to thermoregulate in the same way as the adults. Once again I questioned: how could it be possible for a small giraffe to heat and cool as did an adult? The very much smaller body size of the young wouldn't allow them enough thermal inertia to withstand a hot African day without overheating.

The only way young giraffes could use the passive heating and cooling strategy would be if they could somehow avoid most of the heat that is absorbed by the adults. If they could control the amount of heat they were exposed to each day, the young giraffes could heat up slowly enough to be safe. Now some of the facts I had gathered made sense, but a single big question remained. How did the young manage to avoid building up heat during the day?

While I was sitting and watching one of the small giraffes in the pens one day, the answer suddenly came

Herd of young giraffes in the Serengeti, curious but wary, interrupt their feeding to peer at intruders.

to me. It was very hot and, to avoid the heat, I had moved a chair under a large thorn tree. When I looked up I noticed the young giraffe, who was usually reluctant to come up to the fence when someone was near, standing right next to me in order to be in the shade. Then it occurred to me: the last time I had seen a young giraffe behave like that was when I was watching them in a nursery herd.

The last two mysteries had cleared themselves up. Why do giraffes extend the hiding phase of their young for so long? A lot of the hiding I saw in the nursery herds didn't involve just hiding young giraffes from their predators. It was a behavior aimed at hiding them from the heat of the African day. The reason the hiding period goes on so much longer among giraffes than among other hiding animals is that it takes that extra period of time for the young giraffes to grow to a size large enough to withstand the heat gained while moving and feeding with the adults.

Now everything made sense: the lack of drinking, the extended hiding period and the physiology of young being identical to that of the adults. There is no surprise in the fact that all of the observations and measurements made from giraffes fit together. They always have; otherwise giraffes could hardly have proved successful as a species.

At the conclusion of my work with giraffes I did not foresee any long-range application of the results, particularly since the species was not, and is not today, endangered. However, some months ago I was confronted by an old friend who is now a game warden in Kenya. He was having a great deal of trouble with a group of black rhinoceroses translocated into his park. Although the rhinos were healthy enough and mating, the calves were not surviving. Immediately I thought of the problems that might occur if a large number of giraffes were moved into a park: the adults would be all right if food and water were available, but the cows with calves would not have an established area for hiding their youngsters. Therefore the general health of the population would be fine, but the calf survival would be very low, unless someone used the information from my study and selected the proper calving areas before moving the giraffes.

From this conversation I formed a theory about the problems the black rhinos were having after translocation, and applied to various organizations for support to study this species, one of the most endangered of all of the large animals. This year I will be back in Kenya studying calf survival among black rhinoceroses, using information from the giraffe project to try to help preserve an entirely different species.

By John J. Tarrant

Florence Griswold, Old Lyme, and the Impressionists

At the century's turn a New England town, a mansion and its mistress became a center for advanced American art

The spacious back porch of Florence Griswold's house in 1905; it was a convivial meeting place and, in good weather, a pleasant outdoor dining room. In foreground of artists' group is Willard Metcalf.

In 1899 Miss Florence Griswold, a spinster residing in Old Lyme, Connecticut, had become "a gentlewoman in reduced circumstances," meaning that, though she came of excellent family, she was broke.

Half a dozen years later she was the Gertrude Stein of an important segment of the American Impressionist movement.

When Miss Florence's father, a supposedly prosperous packet boat captain, died in 1882, all he left his widow and daughters was a large Late Georgian mansion with an imposing colonnaded portico. Where had the money gone? Captain Griswold reportedly had been supporting a second family in London.

Mrs. Griswold and her three daughters, running true to the form of that time, opened a school for young ladies. It did not flourish. By 1899 Mrs. Griswold and one daughter had died. Another daughter had moved away. Miss Florence, on her own, was reduced to taking in boarders.

But all through those troublesome years things had been happening far away; things that would touch Miss Florence's life, giving it meaning and fulfillment.

When Claude Monet went to live in Giverny in 1883 (SMITHSONIAN, February 1980), the little village became a magnet for painters young and old. The houses of Giverny sprouted skylights. Pilgrims to the Impressionist shrine crowded into Madame Baudy's inn where, in lieu of payment or out of high spirits, they covered the dining room walls with paintings.

Among the acolytes at Mme Baudy's were American painters, including Theodore Robinson and Willard Metcalf. At that time there was a well-trodden route for would-be American artists. They went to Paris to study at the Académie Julian or the Ecole des Beaux-Arts, then came back home. Robinson and Metcalf were among the first to travel the 40 miles to Giverny.

Impressionism comes to America

(This year, a comprehensive exhibition of the work of the American Impressionists, some 80 paintings by the major artists of the movement, will travel to France. The exhibition, arranged by the Smithsonian Institution Traveling Exhibition Service—SITES—will open at the Petit Palais in Paris on March 30 and then travel to Poland, Germany, Bulgaria and Romania.)

During the 1890s, Impressionism, which had convulsed the French art world for 20 years, was ending as a coherent movement. But it was new to the Americans. They seized upon it, determined to move it to America. They would not be attempting the transplantation onto hostile soil. America had taken to the new way of painting. The Monets and Pissarros displayed at the World's Columbian Exposition of 1893 in Chicago had scored a substantial hit.

Florence Griswold, maternal spirit of American Impressionists, painted by Alphonse Jongers in 1903.

The Americans brought back the Impressionists' love for simple scenes, painted outdoors. But they did not bring back the lust for change and experimentation that effervesced in France. Once the Americans had the concept, they stayed with it for longer than the artists of any other country.

They had a technique; they needed a movement. In the wake of the rebellion the French Impressionists had mounted against the Establishment, ten American painters resigned from the Society of American Artists in December 1897, proclaiming their determination to go it on their own. (In time "The Ten" would become the Establishment, and would be rebelled against in turn by John Sloan, Robert Henri and others who formed "The Eight.") Having now absorbed a new concept and risen in rebellion, the American Impressionists needed a location—their own Giverny.

In the late 19th century Cos Cob was a sleepy little village on the Connecticut shore near the New York border. There were several modest boardinghouses in

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the village, best known being the Holley House, a rambling frame inn owned by Edward and Josephine Holley. Within a few steps of the Holley House could be found the Lower Landing, the Cos Cob Mill, all subjects for the American Impressionist painters.

The Holley House still stands, preserved by the Greenwich Historical Society. From the wide porch you can look out over Greenwich Harbor, painted so often by those who lived in the house. The six-lane I-95 spans the harbor, but with an effort of will you can imagine what it must have been like then.

John Henry Twachtman came here ("This is it!" he is supposed to have exclaimed), and was joined by Theodore Robinson and J. Alden Weir. Soon they were joined by Childe Hassam.

Frederick Childe Hassam was already a well-known painter and a member of The Ten. Despite his exotic name, he came from old New England stock (originally the name had been Horsham). He was related to the painter William Morris Hunt, the architect Richard Morris Hunt and to Nathaniel Hawthorne. In 1887, in Paris, he had completed his first Impressionist painting, *Le Jour du Grand Prix*.

Hassam liked the Holley House, which he dubbed "the Cos Cob Clapboard School of Art." But, restlessly, he continued to look for the ideal place to paint. He found it in the summer of 1903, 70 miles to the east along the Connecticut shore, at Florence Griswold's house in Old Lyme.

Old Lyme lies at the confluence of the Connecticut River and Long Island Sound. Through the flat salt meadows the Duck, Black Hall and Lieutenant rivers —little more than creeks, really—meander to meet the Connecticut. In 1903 open meadows stretched northward toward a series of the ridges that striate Connecticut. Stone walls bordered the winding lanes, and stone bridges spanned the little rivers. The woods were dominated by oaks and cedars. On a clear summer day there was something particularly lucid and brilliant about the light.

Some artists were already spending their summers at Miss Florence Griswold's house, dilapidated and lacking in plumbing though it was. This was because Henry Ward Ranger had discovered it in 1899.

Ranger—heavyset, bearded, exuding self-confidence —was the dean of American Barbizon painters. He swore that he would make Old Lyme into the "new Fontainebleau." There he presided over a growing colony of "tonalists," so-called because their canvases were dominated by one color.

But Ranger's world changed when Childe Hassam arrived in 1903. Hassam, a spruce-looking man of medium height and powerful build, was every bit as forceful and compelling as Ranger. He liked to drink, but this did not bother Miss Florence, who always took care of him when he was a little under the weather. And he was outspoken—his opinions of the tonalists, whom he called the "Brown Gravy School," were well known.

This did not worry Ranger and his colleagues much. After all, their style was, they thought, in the ascendant. Preparing an exhibition of recent paintings, they joked that Hassam's brightly colored *The Old Bridge* (pp. 108-09) would stick out like a sore thumb. It did, indeed, but the comparison was favorable to the newcomer. Within two years Ranger was spending his summers elsewhere. During this period Hassam was the dominant artist at Old Lyme. Impressionism became

Boarders in the Griswold House would often paint on walls, doors and paneling, as did Henry R. Poore, in this narrow eight-foot long caricatural view across the dining-room mantle. In it Poore made a

Florence Griswold at home. Her house is now the museum headquarters of the Lyme Historical Society.

the prevailing mode. And Florence Griswold was its maternal spirit.

The artists covered the walls, doors and paneling of the dining room with paintings. One who didn't pay his bills suffered the ignominious fate of having his panel picture replaced. And the artists were elitists. Beginners might find rooms elsewhere in Old Lyme; they were not welcome at the Griswold House.

There were few exceptions to the artists-only rule. One was Woodrow Wilson, then president of Princeton, who brought his wife and three daughters in the summer of 1905 and again in 1909 and 1910.

In the summer of 1915 the Presidential yacht *Mayflower* dropped anchor near the mouth of the Connecticut. A launch came up the Lieutenant River. Miss Florence, wiping her hands on her apron, came out to be embraced by the President, who then introduced his second wife.

Every day Hassam and the others went out to paint: the fields, the old stone bridges, the rivers and the woods. The white Congregational Church at Old Lyme was painted, it is said, more than the church at Giverny.

And they painted the Griswold House and its environs from all possible aspects. Metcalf painted the moonlit facade of the house, with Miss Florence approaching it from the lawn (p. 111). He offered it to her to pay his bill. She refused: "It's the best thing you've ever done." Within a year the painting had won the Corcoran Gold Medal and a cash prize of $1,000 and had given vital impetus to Metcalf's career.

The townspeople were amused, but they tolerated the strange summer invaders. Indeed, it became a pastime to go to the Griswold House to "see the artists."

One day a group arrived just before dinner. Miss Florence said, "Oh yes, they are all here and you can see them eating." At this point the bell rang and the men dropped to all fours and crawled down the main hall to the dining room, uttering animal noises.

The artistic high jinks at the Griswold House were always more redolent of a fraternity house than a den of Bohemians. Another example was Hassam's occasional donning of bizarre assortments of clothing found in the attic to parade through the street, amazing the citizenry.

The most lurid known scandal involved Willard Metcalf. Metcalf liked to place a lamp in his open window to attract moths for his collection. Acknowledging that his young wife did not find this pastime enthralling, Metcalf did not mind her going canoeing with the artist Robert Nisbet in the evenings. The romance became obvious to all except, evidently, Metcalf. Miss Florence managed with great aplomb to keep the lid on the situation—until Nisbet and Mrs. Metcalf ran off together.

Florence Griswold was far more than a landlady. She presided at the table, participated in all discussions, became adviser, promoter and salesperson for the group. Her oddities were accepted affectionately by the artists, but they neither patronized her nor minimized her abilities.

At first glance it is hard to see what fitted her so

visual chronicle of the companionship and humor of the painters who became known as the Lyme Art Colony. Childe Hassam, stripped to waist, far left, views antics of fellow artists at work and play.

Group member Henry Ward Ranger painted *Autumn Woodlands* in 1902 as movement gathered strength.

Ball State University Art Gallery, Muncie

Prominent American Impressionist Childe Hassam's version of the much-painted Bow Bridge in Old Lyme.

well for her role. Her inability to understand the value of money was notorious. She was forever in debt: to the grocer, to the coal merchant, to all of the local tradespeople. One observer says, "Without one dollar to place against another she continued to serve roast beef one night and roast pork the next." Room and board was $7 a week in 1902; by 1909 it had escalated to $9 a week.

And yet she possessed a shrewd flair for salesmanship. Some sixth sense would tell her when a well-heeled prospect had arrived in town; she would confront him and often persuade him to buy a painting.

Florence Griswold was not beautiful. Nor was she well-groomed. A young artist who arrived in 1910 was horrified at the unkempt person who greeted him, wiping her hands on her apron, hair looking as if it had not been combed for six months. However, as soon as she spoke, her charm won him over. She was an aristocrat, all agreed, intelligent if unschooled, and never stuffy. Dr. Matthew Griswold, a cousin who was for a time her personal physician, says, "She cannot be described fully. She carried everything off with *an air*."

Miss Florence's life had its measure of passion. Frank Bicknell, a good-looking bachelor artist 15 years younger than Miss Florence, stayed at the house for several years and then moved into his own house nearby. While she was always fond of Hassam and the others, she had feelings toward Bicknell for which "fond" seems inadequate. Once, a young woman artist, staying at the Griswold House, visited Bicknell in the afternoon. That evening Miss Florence confronted the young woman. There was shouting. Books and other objects were thrown. The young lady left Lyme.

Were Florence and Bicknell lovers? Someone who knew her well says, "I don't know. You can never be sure. But they were certainly special friends."

One thing is sure. When the painters came to Old Lyme, Miss Florence found her reason for living. In later years she would style herself "Keeper of the

William Chadwick's *Griswold Beach* is typical subject for Impressionists, painted in fresh tones.

Artist Colony." She was more than its keeper. Hassam may have been its artistic force, but she was its human force.

After 1915 the Old Lyme art colony diminished in importance but not in size. Many artists continued to come, but they weren't as well known. The restless Childe Hassam had shifted his summer headquarters to East Hampton, at the eastern end of Long Island. But Florence Griswold, indomitable, continued to preside at the dining table. By the 1930s, she was in serious financial difficulty. According to Jeffrey W. Andersen, current director of the Lyme Historical Society, "the art colony existed only as a historical phenomenon." With few living artists to care for, Florence Griswold guided visitors through the house, which had now become, to her, a shrine.

Just one of the old Impressionists remained: William S. Robinson. Robinson, who won awards and acclaim early in the 20th century but who is all but forgotten today, was a lonely and solitary man. He first came to the Griswold House in 1905, and lived there until Miss Florence died in 1937.

The Griswold House, refurbished, serves today as an art museum and headquarters of the Lyme Historical Society. The dining room paneling still displays the work of Hassam, Metcalf, Bicknell, Henry R. Poore, Clark Voorhees and the others.

The movement associated with it is undergoing some refurbishing as well. American Impressionism had not been treated well by the years.

For a long time American critics denigrated the movement as pallid and imitative. Typically, the eminent American critic Kenyon Cox said of the American Impressionist paintings at the Armory Show: " . . . this work, good, bad and indifferent . . . is so paled by comparison that it needs no mention. Some of it is silly, but little of it is dangerous." Other damning adjectives were "genteel" . . . "tasteful" . . . "fashionable." They were not daring enough. And after the controversial Armory Show of 1913 whetted the

American artistic appetite for exciting new forms, they were passé. (At the Armory Show, originally conceived as a way of promoting *American* painting, most of the sales were of the "degenerate" foreign works.) The painter John Henry Twachtman, who died in 1902, anticipated this when he told his students, ". . . some day some of you will become painters, and a few of you will do distinguished work, and then the American public will turn you down for second and third rate French painters."

The Old Lyme artists responded in different ways. Edmund Greacen, one of those who had gone first to Giverny and then to Old Lyme, was a founding father of the nonprofit Grand Central Art Galleries in New York (still flourishing), where the work of American realist masters is shown.

Others found refuge in withdrawal. William Chadwick was outstanding among the "second generation" of Old Lyme painters, where he first encountered the Impressionist style he was to paint in until his death in 1962. During his lifetime Chadwick made little effort to win either recognition or sales. In 1978 the R. H. Love Galleries of Chicago organized a Chadwick retrospective that brought the painter widespread attention, 16 years after his death in Old Lyme.

In the 1970s, the American Impressionists were rediscovered. Books, monographs and articles have been written about them. Several exhibitions explored the movement, and their works are selling for higher and higher prices.

Joseph Whitley, whose gallery, Old Lyme Impressionists, Inc., stands just down the street from the Griswold House, sees the demand for these artists rising at a tremendous rate. "Some, like Chauncey Ryder, Guy Wiggins and Edmund Greacen, have been growing in reputation for years. Others, like William Chadwick and Charles Ebert, exhibited little during their lives, and their work is only now finding its full market." But the tide is rising dramatically for the whole American Impressionist school.

Some observers attribute this, in part, to the fact that the prices of Monets, Cézannes, and so on, have grown so astronomically that the works of the Americans have become acceptable substitutes.

Salmagundi Club, New York

Frank Bicknell painted at the house for several years; a special friend, he later bought a home nearby.

Different from the French

But it would be wrong to overlook the essential merit of the work itself. The American Impressionists lacked boldness and savagery. After all, they were people with enough money and leisure to go to Paris to learn to paint. To use a word that has gone out of style, they were gentlemen.

We may now be approaching a time when these American painters are no longer reproached for being too much like the French and yet not enough like the French. They worked at their art with a gentler, more modulated approach. Within that discipline they painted some of the most exquisite American paintings ever put on canvas.

Some things *work*, and continue to work for all time, whatever the trend of current fashion. Maybe Impressionism is such a thing; and maybe we are seeing a resurgence of a style that permits full scope to talent or to genius—while evoking appreciation and love from the world at large.

The Corcoran Gallery of Art, Washington

Willard Metcalf's *May Night*, 1906, shows Griswold House, one of many depictions of it. He offered it to Miss Florence as rent. She refused, saying, "It's the best thing you've ever done."

By James Hansen

Knights of Malta, a mini-nation based on chivalry

After Mass and breakfast on Feast of St. John the Baptist, dressed-up Knights leave Rome's Villa Malta.

After 900 years, the last crusading Christian order issues its own stamps and currency and maintains a worldwide network of hospitals

There is a "country"—well, some regard it as a country—that has no citizens, inhabits about three acres of territory, issues coins, stamps and passports, maintains diplomatic relations with some 45 nations, and has been in uninterrupted existence since the 11th century.

This little nation, and it arguably *is* a nation in international law, entered into negotiations to form an alliance with the newly born United States in the 1790s. At that time, the Sovereign Military Hospitaller Order of the Knights of St. John of Jerusalem—the Knights of Malta—had already been a more important force in the world than we were. Warships of the Order, with the eight-pointed Maltese cross on their sails, once swept the Mediterranean as an important line of defense against Moslem infidels and Barbary pirates. (The Knights of Malta and the island of Malta are easily confused, but should not be. Once but no longer held by the Knights, the island is in the British Commonwealth of Nations.)

The Knights lost Malta to Napoleon's troops in 1798 and no longer police the Mediterranean. Their headquarters in Rome, at Palazzo Malta on the city's most elegant shopping street, Via Condotti, is—like the Vatican—not part of Italian territory. Once you step through the doorway at number 68, you enter part of what is left of the reign of the Knights of Malta.

The two-and-a-half acres of Villa Malta, a few miles away on the Aventine Hill, are all that remains of the domain. But within that territory the word of the Order's Prince and Grand Master is sovereign.

The terms "prince" and "knight" are not thrown around loosely. To join either of the two senior ranks of Knights that command the Order, a candidate must be able to demonstrate the untainted nobility of some or all of his grandparents for at least 200 years before *their* birth.

"People sometimes write us, signing themselves Prince of Slovenia, Duke of Transylvania, or some such," comments an officer of the Order. "They hope we'll reply addressing them with all those titles so they can go around to their friends saying that the Order of Malta recognizes their nobility. We check, and if the title is nonexistent, a letter goes back: Dear Sir: . . ." (The Knights also have identified at least 15 other "Orders of Malta" using their name and history.)

Noble blood, in itself, is not enough. Knights must be practicing Roman Catholics. As a Catholic noble order, the Knights owe allegiance to the Pope. There are three ranks of knighthood. In descending order of excellence, they are the Knights of Justice, the Knights of Obedience and a third group—which might be called "other"—consisting of lay and honorary members. The most numerous of the latter are the Knights of Magistral Grace.

The Knights of the first two grades must be of noble

Amid ruins of Trajan's Forum stands the Casa di Rodi (left), home of Knights of Malta's Italian association.

Color photographs by John G. Ross

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In St. Mary's of the Priory Church at Villa Malta, Knights of the Order worship at a Mass.

birth, though some other members need not be. Knights of less pure blood—and women—can hope to join the third category by way of "the grace and favor of the Grand Master." When this is granted, it is usually for conspicuous good works that aid the Order in its modern mission of maintaining hospitals and leper asylums throughout the world.

There are, in all, more than 9,000 Knights and Dames of Magistral Grace. Of these, roughly 1,500 live in the United States. But they are excluded from the Order's most senior posts. American members include William E. Simon, former Secretary of the Treasury; Clare Boothe Luce; William F. Buckley jr.; Terence Cardinal Cooke, archbishop of New York; and William A. Wilson, President Reagan's envoy to the Vatican.

Command roles are reserved for Knights who are noble by blood. From their number are drawn the Grand Commander, Grand Chancellor, the Hospitaller, and the Receiver of the Common Treasure. These officers, with the other noble members of the Council Complete of State, elect the Grand Master, who serves for life and assumes the title of Prince, if he

Formerly with the American Foreign Service in Naples, James Hansen is a free-lance writer now based in Rome.

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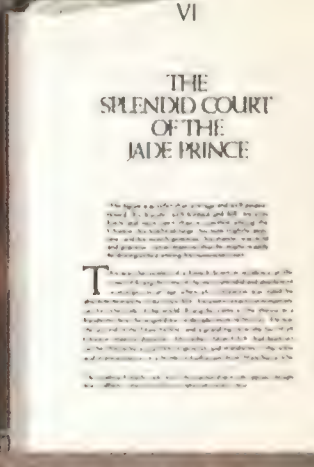

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does not already have it, and is called "Most Eminent Highness."

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The order is the only surviving fragment of the crusading Christian orders that fought so long ago to deliver the Holy Land from the infidels. The Teutonic Knights and the Templars are gone, even if their names are hardly forgotten.

The primary mission of the Order is caring for the sick. In the beginning many of the Knights themselves did this work. Nowadays they raise funds and are in charge of administration, while leaving the nursing and doctoring to professionals. The Order maintains hospitals, research centers and clinics all over the world. It is active with field hospitals and relief programs during wars and after earthquakes and other natural disasters.

Though 20th-century earthquakes must strongly resemble those of centuries past, in some odd way nothing seems more modern than disaster. In late 1980, right after the disastrous earthquake that killed more than 2,000 people in southern Italy, the Knights appeared in Valva, in the mountains above and behind Salerno.

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In a Mediterranean Sea battle depicted in 18th-century painting at Order's offices, a Maltese frigate sinks an Algerine marauder.

slowly driven out of the Holy Land in a series of failed heroic last stands. When the Crusader principalities came to an end with the fall of Acre in 1291, the Hospitallers withdrew to Cyprus and then, around 1310, took control of the island of Rhodes just off the Turkish coast.

This lasted until 1522, when Suleiman the Magnificent appeared off Rhodes with a fleet of some 700 warships and an army of 200,000 men. The Order's 500-odd knights and 6,000 soldiers managed to hold out for half a year against the superior force, but finally withdrew on the first of January 1523.

The Order remained without a home until 1530, when the Emperor Charles V granted the Knights the islands of Malta and nearby Gozo as part of an imperial fief. As feudal rent, the Order was required each year on All Saints Day to send a falcon to the Viceroy of Sicily "in memory and recognition of the benefits which the Order had received." (From that came the famous Maltese Falcon yarn.) Another condition imposed by Charles was the perpetual neutrality of the Order in wars between Christian princes.

With all respect to the modern Maltese tourist authorities, Malta, at least at the time of the Knights' arrival, was the sort of island only a mother could love. A special commission of the Order, searching for a home after the fall of Rhodes, visited the island in 1524 and had extremely mixed feelings about what it saw. The place was small (only about 120 square miles), rocky, short on water, poor and generally godforsaken—but it had splendid natural harbors. The Knights landed on Malta in autumn of the year 1530.

The defenses of the island built by the Order were soon tested. A first attack by the Ottoman Empire was beaten off in 1551. Then, in 1565, Suleiman's armies returned to Malta with an attack force of 373 warships and 40,000 men.

At the beginning of the siege the Grand Master, de la Valette, had at his command only 500 Knights and 1,800 private soldiers. These were reinforced by two relief columns which broke through the attacking lines and brought the number of defenders to around 9,000 at the end.

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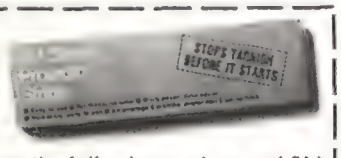

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to Constantinople. Most of the others died under the walls of Malta. The siege held the course of a summer and, when it was finally lifted, only 600 defenders were unwounded.

The victory rang through the West and the power of the Knights Hospitaller of St. John of Jerusalem, of Rhodes and, now, of Malta, reached its highest point. Turkish sea power was left crippled by the defeat and in 1571 was further decimated at the battle of Lepanto by the combined fleets of the Order, the Pope, Spain, Venice and Genoa.

The knightly character of the Order quickly revealed itself. Work was begun on a new capital city and on a new building to house what was among the notable hospitals in Christendom.

The hospital was highly respected in its age, a 16th-century institution treating patients from all over the Christian West. Care was taken to keep medical and surgical cases separated; patients with fever and dysentery were isolated from the others.

Patients slept one to a bed and enjoyed a planned menu. It is said that they were fed from a silver dining service as befitted "our lords the sick," sometimes by the Knights themselves. The Great Ward was kept "cleane and

In World War II, hospital planes of the Order fly over St. Peter's.

In Vietnam, worker of German branch of Knights bandages a victim of napalm.

sweet," according to contemporary reports, and the mentally ill were treated humanely. The Sacred Infirmary grew to be a kind of teaching hospital. The bodies of deceased Knights and patients were dissected and examined at a time when such study was generally forbidden.

The new capital, called Valletta after the Grand Master who had led the defense of the island, still bears that name. Huge fortifications were raised to make it impregnable, and it became known for its magnificent baroque architecture. Paintings by Caravaggio, Matia Preti and others decorated the Conventual Church of St. John the Baptist, the Order's spiritual home.

The Knights of Malta began to dabble in the game of world power, and even became briefly a territorial power in North America. In 1653 Louis XIV of France granted it sovereignty over the four Caribbean islands of St. Kitts (St. Christopher), St. Martin, St. Croix and St. Barthélemy (St. Barts). In the end, the Knights did not care to maintain a Caribbean empire and sold out to the French West India Company.

The Knights, some of whom fought in America's Revolutionary War, shortly had another revolution to worry about, the one in France in 1789. In 1792 the Republic seized all of the Order's property in France.

The Knights began casting around

Found in a Brooklyn backyard.

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Diane Rawson

Fort St. Angelo was stronghold of Knights at Grand Harbour on Malta.

for a new ally, and possibly a new home. The choice fell on the United States. In 1794, the chargé d'affaires of the Order's embassy in Paris, Commander de Cibon, opened negotiations with James Monroe, the American minister to France and a future President, for an eventual alliance between the Knights of Malta and the American Republic.

In the style of the no-holds-barred diplomacy of that age, the Order explained what it was offering in the clearest possible terms: "It is principally towards the Mediterranean that American sailors, guided by their industry, present themselves in great numbers. . . . Of what importance would it not be for the American commerce to find upon this stormy sea, fine ports, provisions, and even protection against the Algerine pirates?"

This service was, of course, not offered free. The diplomatic note continued: "In exchange for the succors and protection . . . would the United States consent to grant, in full right, to the Order of Malta some lands in America, in such quantity as might be agreed on between the two governments, placing such land under the immediate protection and safeguard of the American loyalty?"

This was an interesting offer. The Americans had little else besides land,

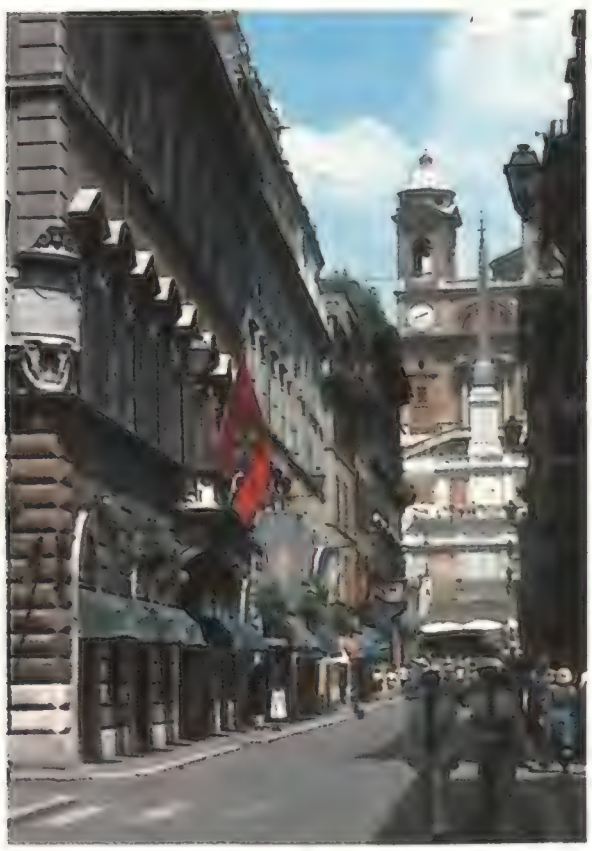
but of that they had a great deal. And the pirates were indeed a menace.

Monroe's reply was a model of caution. After touching on the "great injury from the Algerines" and observing that the Knights were in a position to do something about this, Monroe got to the heart of the problem in his drafted reply.

"The United States possess at present extensive and very valuable vacant territory. It is their intention to dispose of it by sale; by which however the right of soil only will be conveyed; the jurisdiction still remaining with them. The government too of such territory is already prescribed: it must be elective or republican . . . part of the existing national system."

Monroe concluded by saying he would seek instructions from his government in the matter, but his reply is clear enough. The Knights were as welcome as anyone else in the United States, but not as a separate and sovereign government.

This is the kind of historical nugget that opens the door to all sorts of speculation, but the real world tends to run on "what happened" and not



Via Condotti, where flag bearing Maltese cross flies over Order's home.

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Some countries accept the Knights' stamps, like this commemorative.

"what if." What happened is that Napoleon's armies stopped off in Malta four years later in 1798 on their way to the Egyptian campaign and threw the Knights out. The British later took the island from the French, keeping it until the mid-20th century.

The Order of Malta became a kind of government in exile, finally establishing itself permanently in Rome in 1834 and maintaining the structure and sovereign rights of a nation.

By something resembling historical force of habit, this state of affairs has survived to the present day. Nations having diplomatic ties with the Knights range from Spain, Austria, Italy and Brazil to Togo, Upper Volta and Mauretania. One country in what once would have been infidel enemy territory — Lebanon — maintains diplomatic relations with the Order. Even Castro's Cuba sends an ambassador to the Knights of Malta. The only continent not represented is North America. The United States does not exchange ambassadors with the Knights. Nor do the British, the Russians or any other Iron Curtain country.

Like other governments, the Knights have a judicial system and issue stamps and coins. Their coinage exists primarily for sale to collectors and does not really circulate in the usual sense of the term. The stamps, though they are honored by the postal services of a very few countries,

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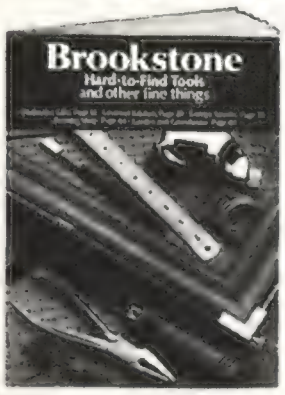

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also are intended mainly for collectors. Gifts and dues from members are the main source of income.

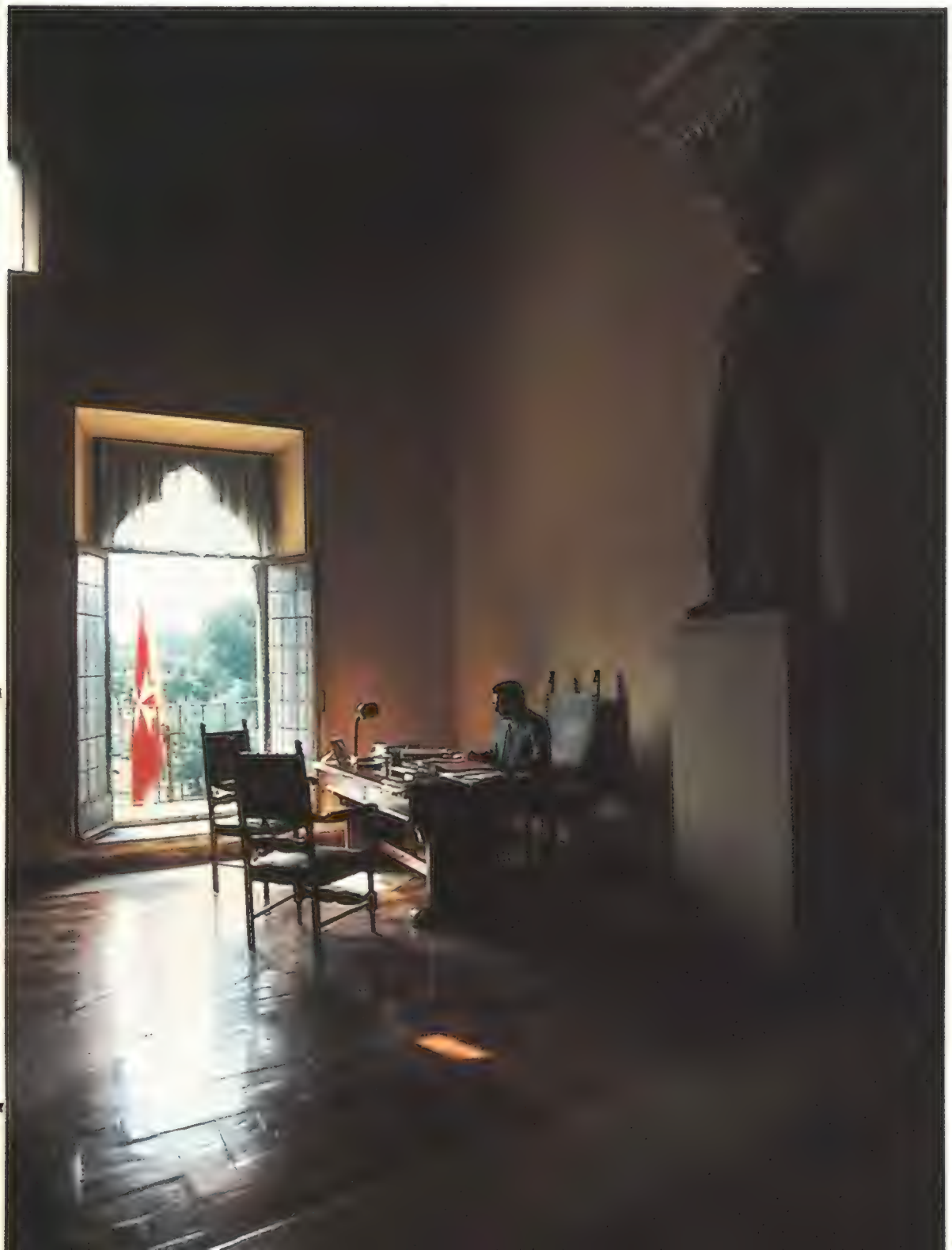
Ceremonial duties are an important element in the lives of the senior Knights resident in Rome, the officers and governors of the Order. Two annual Papal audiences, the annual reception for the diplomatic corps, the annual celebration of the national holiday on the Feast of St. John the Baptist are high state occasions, and the most formal dress is required.

The spiritual climax of the year is the annual pilgrimage to Lourdes, noted for miraculous appearances of the Virgin. In a sign of humility, the Knights leave their red ceremonial robes behind and wear their simple black military field uniforms when they march in procession.

Can all this go on indefinitely? Is there still room for aristocracy and highly distilled bloodlines toward the end of the 20th century? A Knight defends the aristocratic character of the Order of Malta: "The case is similar to that of a workingman's club which accepts only workers as members. We are nobles."

This might be criticized on the ground that it ought to be easier for an aristocrat to find a job than for a workingman to find several generations of noble ancestors, but the club is theirs, and has been for a long time.

At work at a desk in Casa di Rodi is Marcello Maria Marrocco, press secretary for the Knights of Malta's Italian association.



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Book Reviews

Back in Keith County
John Janovy jr.
St. Martin's Press, $10.95

"Read a scientific article not too long ago in which some guy had analyzed human need for wilderness. This article said that humans evolved in the wilderness, therefore had a basic need for exposure to natural areas before they could exhibit natural forms of human behavior."

This "human need for wilderness" is the trail wending through *Back in Keith County* where the wilderness has its usual scattering of bird and fish and flooded river woven into the streams of John Janovy's "inner cowboy country." These 14 essays are a very human mix of biology, sentiment, wandering observation and personal philosophy.

In their quest for expansive definitions —from the Nebraska prairie itself to the gist of pioneer independence—Janovy takes us through the sandhills of American education. The one-room schoolhouse and the university graduate program both become vantage points for discussing freedom and independence and educational politics and about how learning and education are sometimes connected and sometimes not. All of this speculation meshes with the biological details of that special Keith County wilderness that encourages gazing into the far distance. And the inner distance. And the underlying curiosity for doing both.

The chapter called "Game Fish, Trash Fish, Chubs and Shiners" ripples outward from the cast of a spinning rod through a series of conversational episodes that eventually lead back to water. The fisherman starts by telling us that "Game fish are game fish only in relation to trash fish." Then one such species of "trash fish" is gill-netted for a classroom experiment in parasite distribution. A graph of the results forms a shape representing the negative binomial which has lots of biological implications. In the case of the sucker worms, it shows that *"the majority of the worms are found in the minority of the hosts."*

"The mathematics of sucker worms" leads to the moralities of the gill net—"There is some fish memory, no doubt, that is unable to casually shake off the experience of entangling circumstances." And soon we are back to the flycaster's stream which ripples with the fly-casting of ideas: "A teacher's bright ideas [that] wriggle and struggle through the murky waters of daily life attracting nibbles, bites, sometimes hard strikes by some game fish not large enough to be keepers."

Later in the book at the local bar, Sip 'n' Sizzle, we meet the game fish of all game fish—Lonnie Paul Dinkle. This

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tumbleweed composite is believably amusing; one assumes that he is not based on a single individual. He is full of Jack Daniels and prairie wit much of the time. Dinkle unfolds as a Paul Bunyan of curiosity with a split-toothed grin, a "Keep on truckin'" belt buckle, a do-anything pocket knife, and a surprising affinity for scientific method.

Of course Dinkle takes to "Doc" Janovy immediately. "Might . . . get myself a *Pee-Haitch-Dee* some day so's I can come

Harry Heron, "the filthiest, dumbest, most bedraggled hopeless case . . ."

into a bar in North Platte and have Blondena tell other folks I'm *Dr.* Dinkle. I tell you, Dr. Whateveryournameis, I got dreams." Dinkle tags along back to the research camp where he spends a lot of time just supposing things like what determines whether a wren's "nest becomes a false nest or a real nest."

Janovy's comment on this: "Can't just have *anybody* comin' in here thinkin' up good ideas high-class scientists wish they'd thought of first." Wry admiration for the individual viewpoint.

One afternoon when Lonnie Paul is uncharacteristically late for dinner, the author finds him sitting high on a Nebraska bluff. " 'Just look out there,

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Doc,' " he nodded off toward the north into the Sandhills. You could see maybe fifteen miles. 'Doesn't that just give you some feelin' inside you can't describe? Don't you just feel you *need* what you're seein' out there?' " This is one of the conversations that makes Dinkle seem perfectly qualified to end up at Texas A & M researching "the isolation and purification of the human soul."

Whether for his life-style or attitudes, the symbolic Lonnie Paul Dinkle fits right in with the discussion of "the biology of disturbed areas" in Chapter 13. Although this essay also deals with Thunderboats (hydroplanes) breaking the prairie lake, with science, economic opportunity, and ecological succession, it is the image of blowout grass that sticks with me.

"Deer rolling around, cattle pawing a trail, sometimes nothing more than the shape of a dune from another time channeling the wind . . . all can start the blowing. Next thing you know there's bare sand. The earless lizards move into the blowout edges then. Before long you get blowout grass, sparse, thin, blowing in circles making patterns in the sand. . . . Somehow that blowout is a slate wiped clean. Somehow a slate wiped clean symbolizes opportunity. . . . Blowout grass is *genetically adapted to an assumed constant supply of clean slate.*"
Carrol B. Fleming
Washington science writer

Entering the Maze: Identity and Change in Modern Culture
O. B. Hardison jr.
Oxford University Press, $19.95

If anyone qualifies for that much-abused description—Renaissance man—O. B. Hardison jr. does. While it is fitting that the Director of the Folger Shakespeare Library in Washington be both outstanding scholar and talented administrator, Hardison is a classic example of a rapidly vanishing species in American life. He is an involved scholar, poet and essayist who believes it imperative to speak out on complex issues from a broad, humanistic perspective. No area is too difficult for him. In this, his ninth book, he attempts to define the current cultural maze, "a tangle of paths that seem to lead everywhere and nowhere at the same time."

Hardison believes our present identity crisis is a product of modern Man's op-

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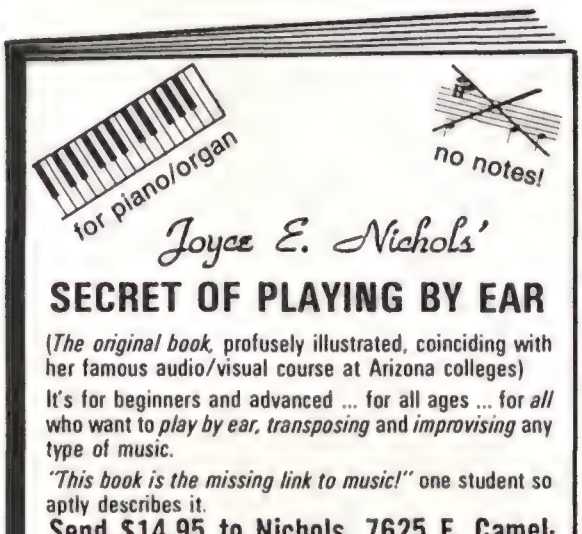

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timism and expectations. Extraordinary 20th-century technological achievements have altered historic perceptions, and "every moment of equilibrium turns out to be an illusion, a pause for breath in an accelerating process of change." The result, he says, is "a widening gap . . . between identity formed by tradition and identity demanded by the present."

In 16 integrated essays, Hardison offers no utopias, prescribes no miracle drugs and is neutral about the future. Instead, through the exploration of ideas, he charts paths through the contemporary forest in order to define where we stand at this juncture.

Hardison's book is divided into four parts. The first group examines ideal traditions of the past: how European and particularly American cultures have balanced the secular with the religious; the significance of open societies providing unprecedented variety and richness; and the curious, ancient relationship of "politics and beauty."

"In Mazes Lost," his second arrangement, Hardison explores what happens when long-held values come face to face with technology (with a fascinating look at the medical profession), values versus utilitarianism in education, and changes in a world view based now on information rather than knowledge.

The third group concerns itself with the influence of the cinema, and his concluding section speculates on "whether it will be possible in the future to retain traditions that link modern society to its past, like the thread given by Ariadne to Theseus when he entered the maze of the Minotaur."

Entering the Maze succeeds as a coherent whole in a time of fragmented, frantic and freak solutions to societal problems. A reader would be well advised to regard it not as a series of essays, but rather as a holistic work. He could return to an extremely astute summary of Alfred Hitchcock's career as a film maker, or reread Hardison's final chapter on the possible importance of poetry as one way of dealing with the maze.

Very few people in America—only a true Renaissance man, in fact—would end his book with an essay entitled "The Future of Poetry" and devote the first two pages to a discussion of the Third and other worlds. It turns out the Fourth World "unites the past with the present, and it is universal because it unites the

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tribal craftsman in Nairobi with the symphony conductor in Tokyo and the insurance executive in Hartford, Connecticut." Finally, Hardison isn't Pollyanna-ish when he describes "an emerging international consciousness." Nonetheless, his insights suggest "art may eventually (and perhaps more rapidly than anyone can now imagine) help society to turn in a creative and life-enhancing direction."

The photographer Paul Strand has said "all light is available light" and Hardison, in a masterful, serious (but not "high seriousness"), playful (the mind enraptured in the best sense) and coruscating way, has opened important windows and let needed light come filtering through.
William Claire
Poet, Essayist
Director, Washington office
State University of New York

The Stones of Venice
John Ruskin
Little, Brown, $29.95

John Ruskin: The Passionate Moralist
Joan Abse
Knopf, $18.50

In times of change and insecurity, societies tend to look toward the past, as though recapturing a familiar time can ward off an uncertain future. The tendency now is to look wistfully toward Victorian England, just as the Victorians, deeming their own time unsettling, looked for salvation to an even earlier

Ruskin's study of the marble inlaying on the front of the Casa Loredan

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period. In his *Stones of Venice*—a guidebook, work of art criticism, technical manual and philosophical tract all in one—John Ruskin argued passionately in the 1850s that England's future could be safeguarded if she would learn from the mistakes of Venice and return to Gothic architecture. The idea sounds quite mad, but then the pioneers of modern architecture held no less grandiose a view of the power of their craft, and Le Corbusier ended his book, *Toward a New Architecture*, with the words, "Architecture or revolution." The Bauhaus itself has, in fact, been called the "wayward, perhaps disrespectful, but still legitimate grandchild of *The Stones of Venice*." Ironically, interest in Ruskin seems to be mounting in approximately direct proportion to modernism's popularity.

A new edition of *The Stones of Venice* has just been published. As editor, Jan Morris has pared the original three volumes down to one and written a superb introduction. The book is beautifully illustrated, featuring a number of Ruskin's own drawings, many in color.

Ruskin writes about buildings and bits of buildings with a care and affection usually reserved for beloved friends. (And, indeed, objects did tend to substitute in his life for people.) He wrote, "The whole function of the artist in the world is to be a seeing and feeling creature; to be an instrument of such tenderness and sensitiveness, that no shadow, no hue, no line, no instantaneous and evanescent expression of the visible things around him, nor any of the emotions which they are capable of conveying to the spirit which has been given him, shall either be left unrecorded, or fade from the book of record." Ruskin was the rare art critic who in writing about one masterpiece could create another.

His argument for Gothic architecture went something as follows, historically incomplete and untenable as it may have been: Christianity gave birth to a new architecture immeasurably superior to any that had come before or would ever follow. The rise of the Venetian republic and its apogee occurred, Ruskin maintained, between 1360 and 1423 and was inseparable from Venetian Gothic, which he saw as the embodiment of spiritual clarity and strength. Ruskin admired it for its unstudied, picturesque and informal qualities, and for putting convenience above convention and therefore abandoning classical symmetry and proportions. For the copycat neo-Gothic, which his book made so popular in Victorian England, he had only scorn. As Jan Morris writes, "It was the real thing he loved . . . the sense it gave of a lofty common purpose."

After 1423, Ruskin believed, faith, morals, art and empire all declined because Christianity in Europe was undermined and a pagan architecture introduced. Of Venice before 1423 he wrote, "There was . . . a depth of devotion, in which lay all her strength." The Renaissance he considered an irredeemable swamp: ". . . the whole mass of the architecture, founded on Greek and Roman models, which we have been in the habit of building for the last three centuries, is utterly devoid of all life, virtue, honourableness, or power of doing good. It is base, unnatural, unfruitful, unenjoyable and impious."

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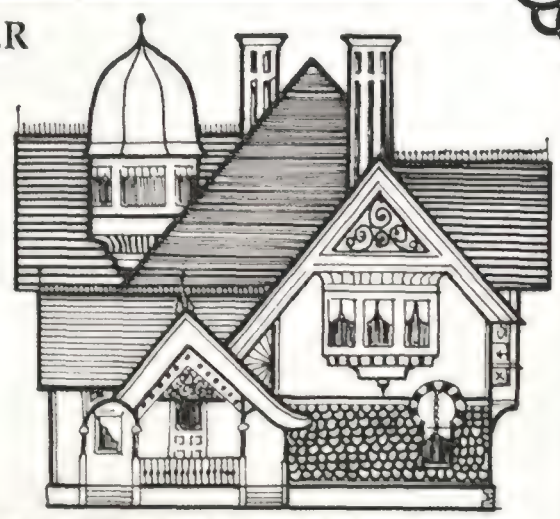

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prefer the emotionally cool, perfected and formal, static and essentially conservative way. Ultimately, each defends his attitude in moral terms, and none has done so more passionately than Ruskin.

John Ruskin: The Passionate Moralist is the fitting title of a very readable, sometimes compelling new biography by Joan Abse. Ruskin was a man who, like his writings, was full of turmoil and contradictions, and scholars have long been intrigued by his troubled life. His relationship with his parents was cripplingly close. His marriage of six years to a cousin, Effie Gray, was never consummated and was annulled at Effie's insistence. Ruskin suffered a lifelong passion for young girls, which focused for some 18 years on Rose La Touche, whom he met when she was only ten and he 49. He ran through a large fortune in a very short time, lost his religious faith and political conservatism and suffered a series of emotional breakdowns before dying insane at the age of 80.

Unlike others of his biographers, Joan Abse is a frank admirer and apologist. She is more concerned with chronicling his unhappy life than appraising his accomplishments. As she says, "I have tried in this book to present a definite image of a great and sad man." It is an image aptly conveyed by these two new additions to Ruskiniana.

Andrea O. Dean
Senior Editor, *AIA Journal*

The Oceans: Our Last Resource
Wesley Marx
Sierra Club Books, $13.95

Wesley Marx's latest book is mistitled. In *The Oceans* Marx deals with far more than the seven seas. He does cover oceanic subjects such as nuclear waste dumping, deep-sea mining, oil drilling, large-scale forage fishing and coastal development. But Marx also deals with inland sewage, renewable energy sources, nuclear power and other "high-risk" technologies. Marx's main concern, it becomes clear, is not only the future of the oceans, but of our entire "watery planet."

Marx tells his story in a readable style that mixes fact and anecdote. His basic thesis is that humans overestimate the ability of the oceans—and the land—to provide food, fuel and minerals. As Marx puts it: "These estimates were inspired less by careful assessment than by our

faith in technology and our hope that the ocean, big as it is, can perpetuate the same relentless exploitation that has depleted too many resources on land." Marx's answer is that we must lower our expectations: "We must expect less from the ocean if we do not expect more from our ability to understand and protect its critical processes."

Marx, who lectures on social ecology at the University of California, Irvine, and is the author of the best-selling *The Frail Ocean* and other environmental books, cites dozens of studies, reports, Congressional hearings and other factual data throughout the book. But it is haphazardly annotated. For one thing, the book contains no footnotes. Clumps of bibliographical items are grouped alphabetically by subject and chapter in the rear of the book in a section called "References." It would take a good bit of detective work to find some of Marx's sources.

But *The Oceans* is not all facts and figures. Marx spices up his narrative with first-person vignettes. The chapter on the importance of sea vegetation, for example, contains a description of the author as a young boy playing with giant brown sea kelp on a California beach. The chapter on the ecology of coastal beaches contains details of a family vacation on an unidentified East Coast barrier island.

The personal narratives do not get in the way of the overall story. In fact, they help illuminate Marx's points by injecting a human element into what otherwise might have been a dry recitation of facts. And Marx's first-person passages also contain the book's best descriptive writing. One example is this passage telling what it's like to explore a bed of kelp:

"The canopy above sieves the sunlight into wavering beams of amber, bronze and green. The blades dangle like golden pennants. The coiled stipes rise like stately solar towers five stories or more high. Quick death in the form of darting bass and plunging pelicans rides this fertile water column like a busy elevator. The colossal plants sway quietly. I hope the future will have room for both ocean energy farms and wild kelp forests."

All of Marx's arguments in *The Oceans* run directly counter to the government's new energy and environmental policies. His ideas are well reasoned, eminently sensible and prescient.

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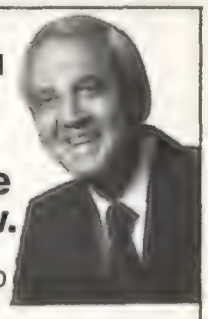

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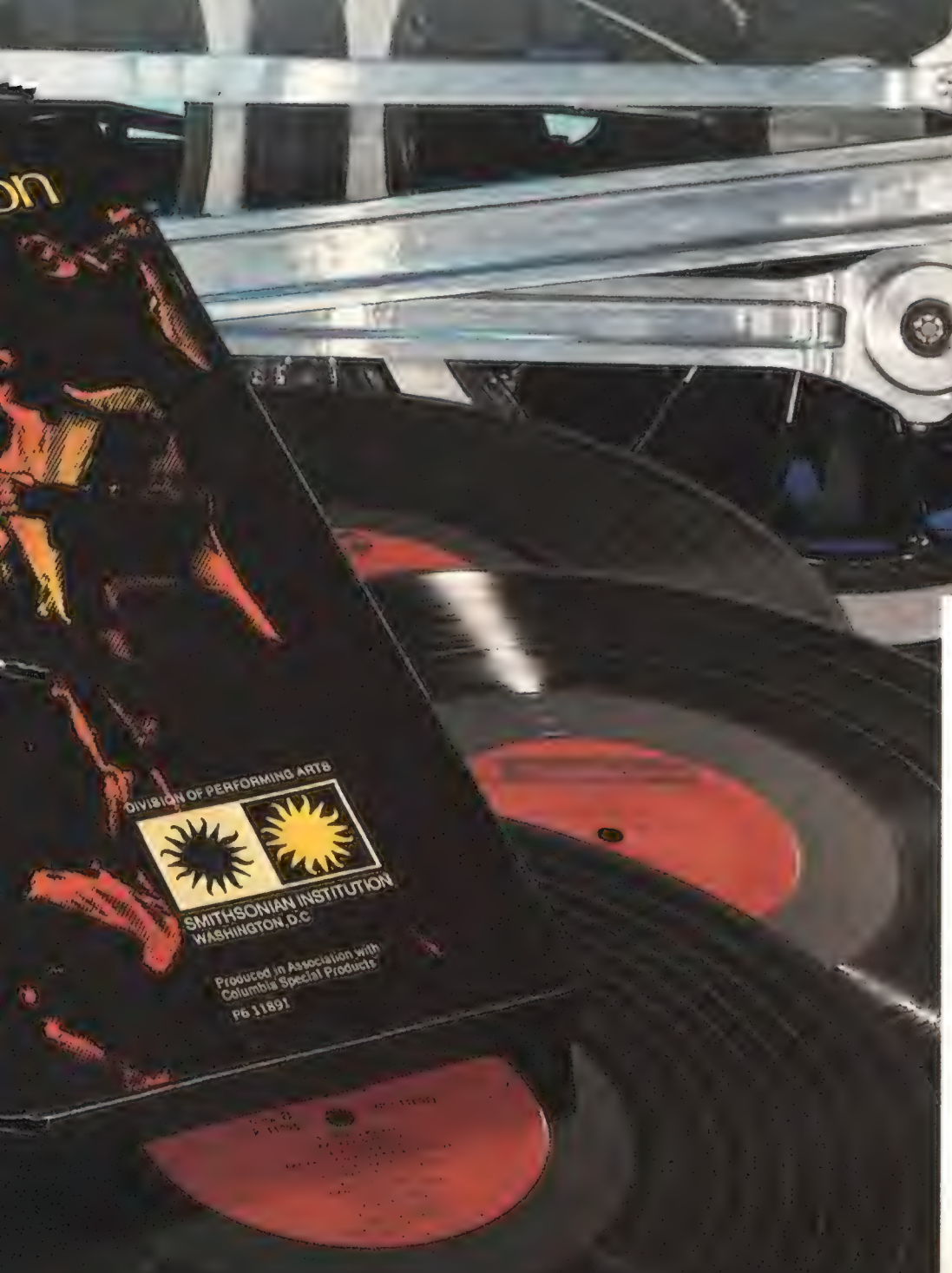

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Additional reading

Franklin D. Roosevelt (p. 38)

FDR, A Centenary Remembrance by Joseph Alsop, pictorial commentary by Roland Gelatt, Viking Press, 1982

Franklin D. Roosevelt by Frank Freidel, Little, Brown: *The Apprenticeship* (Vol. 1), 1952; *The Ordeal* (Vol. 2), 1954; *The Triumph* (Vol. 3), 1956; *Launching the New Deal* (Vol. 4), 1973

The Age of Roosevelt by Arthur M. Schlesinger jr., Houghton Mifflin: *The Crisis of the Old Order*, 1919-1933 (Vol. 1), 1956; *The Coming of the New Deal* (Vol. 2), 1959; *The Politics of Upheaval* (Vol. 3), 1960

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"Current Rifting Episode in North Iceland" by Axel Björnsson *et al.*, *Nature*, March 24, 1977

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Creativity (p. 64)

The Emerging Goddess: The Creative Process in Art, Science and Other Fields by Albert Rothenberg, University of Chicago Press, 1979

The Act of Creation by Arthur Koestler, Macmillan, 1964

The Creative Process, edited by Brewster Ghiselin, Mentor from New American Library, 1952

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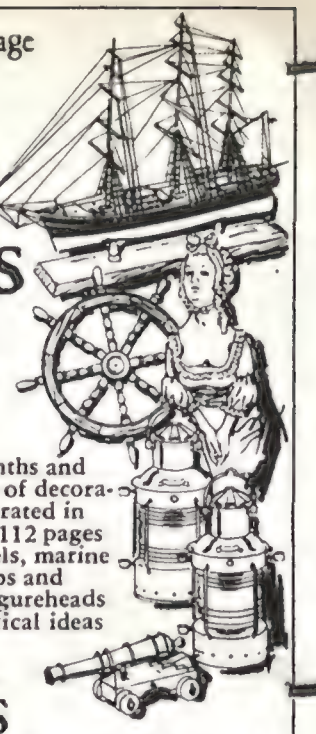

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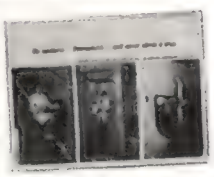

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Wind tunnels (p. 76)

Wind Tunnels of NASA by Donald D. Baals and William R. Corliss, NASA, 1981

Introduction to Flight; Its Engineering and History by John D. Anderson jr., McGraw-Hill, 1978

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Maurice Sendak (p. 88)

The Art of Maurice Sendak by Selma G. Lanes, Abrams, 1980

"Maurice Sendak" by Barnaby Conrad III, *Horizon*, May 1981

"The Playful Art of Maurice Sendak" by John Lahr, *New York Times Magazine*, October 12, 1980

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"Cow-calf Relationships in Giraffe" by Vaughan A. Langman (in English), *Zeitschrift fur Tierpsychologie*, Vol. 43, 1977

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American Impressionism by Richard J. Boyle, New York Graphic Society, Boston, 1974

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The Shield and the Sword by Ernle Bradford, Hodder and Stoughton, 1972

The Last of the Crusaders by Roderick Cavaliero, Dufour Editions (Philadelphia), 1963

The Knights of St. John in Jerusalem and Cyprus c. 1050-1310 by Jonathan Riley-Smith, St. Martin's Press, 1967

Medical Work of the Knights Hospitallers of St. John of Jerusalem by Edgar Erskine Hume, The Johns Hopkins Press, 1940

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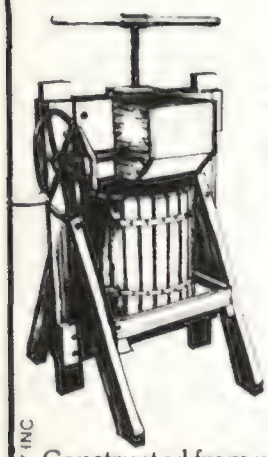

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Smithsonian highlights

In January the thoughts of Smithsonian visitors no doubt will turn to Franklin Delano Roosevelt as six museums mount exhibits honoring the centennial of his birth (p. 38). We can see him "flying" at the Air and Space Museum and hear his fireside chats at American History; his first steps into politics are documented at the Portrait Gallery. On view at the Museum of American Art is art from "his" projects; some of the graduates of those projects are showing later successes at the Hirshhorn. At the Anacostia Neighborhood Museum, a new exhibit documents the involvement of blacks with the New Deal and the particular role played by educator Mary McLeod Bethune (right) in organizing the group that came to be called Roosevelt's "Black Cabinet."

Special January events

National Air and Space Museum

The Flying Roosevelt (opens January 25) Photos of the nation's first "flying" President.

Carrier Aviation (January 7, 7:30 P.M.) Talk by Captain Eric Brown, Royal Navy (Ret.)

Beginnings of Scientific Astronomy (January 20, 7:30 P.M.) Professor Asger Aaboe discusses Babylonian and Greek methods.

The Wayfaring Earth (January 2, 9 A.M.) Monthly sky lecture, Spacearium.

Space Films (January 22, 29; 7:30 P.M.)

National Museum of American History

Franklin Delano Roosevelt: The Intimate Presidency (January 31-August) Focuses on FDR's special techniques of communication—fireside chats, documentary photography, theater and art.

General von Steuben: A Secret Weapon for the Americans (through April 18).

Free Film Theater (Wednesdays, Thursdays, 12:30 P.M.) Focus is FDR.

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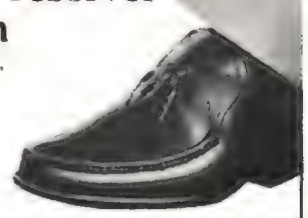

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Anacostia exhibit documents role of Mary McLeod Bethune in the New Deal.

Anacostia Neighborhood Museum
Mary McLeod Bethune and Roosevelt's "Black Cabinet" (January 24-May 3) Artifacts and memorabilia help tell the story of this charismatic administrator (above) who brought other black specialists into the New Deal.

National Museum of African Art
Life . . . Afterlife: African Funerary Sculpture (through March 1) Figures, maps, textiles, explanations (p. 144); related lectures, January 17, 24, 31; 2 P.M.
Storytelling (January 2, 16; 12:30 P.M.)

Hirshhorn Museum & Sculpture Garden
Five Distinguished Alumni: The W.P.A. Federal Arts Project (January 21-February 22) Fifteen works by participants in this Roosevelt-initiated program.
Metaphor: New Projects by Contemporary Sculptors (through February 28) Large-scale works executed specially for this exhibition.

National Portrait Gallery
FDR: The Early Years (January 9-June 27) Memorabilia surrounding the young man's entrance into the political arena.
Carl Schurz: America's Teutonic Reformer (January 15-July 18) Small exhibit honors this German immigrant's campaign for good government.

Cooper-Hewitt (New York)
Robert Adam and His Style (January 19-April 11) Drawings, furniture and silver by this celebrated Scottish architect.
Puppets: Art and Entertainment (through February 21) More than 100 examples.
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National Museum of Natural History
Deep-Ocean Photography Views of the sea floor at 12,000 feet taken by remote-controlled camera equipment designed by U.S. Navy oceanographer Walter H. Jahn; related films, January 22, noon.
Dinosaurs and Other Reptiles New exhibit on fossils and evolution (SMITHSONIAN, December 1981).
Botanical Prints by Henry Evans (through February 7).
Life on Earth (January 8, 15, 29; noon) Acclaimed BBC evolution series; films will run through April (for information call 357-1756).
Dinosaur Films (January 2, 2:30 P.M.)

National Museum of American Art
Roosevelt's America: New Deal Paintings from NMAA (opens January 9) Thirty works show artists' concern with the times.
Recent Acquisitions: Prints, Drawings and Watercolors (January 22-May 16) Works collected during previous two years.

Renwick Gallery
Inedible Cakes Celebrating the Renwick Gallery's Tenth Birthday (January 29-April 25) Fourteen cakes of fabric, clay, metal, neon and glass.
Good as Gold (through March 28) Jewelry in alternative materials.

Freer Gallery
Japanese Prints New exhibit of 30 18th-19th-century works from Ukiyo-e school.

Smithsonian events
For tickets and price information on Resident Associate events, call 357-3030:
FDR: In the Shadow of History (January 30) All-day seminar.
Storytelling for Adults: O'Callahan in Concert (January 12, 8 P.M.)
John Eaton: Live at Smithsonian (January 17, February 28, March 21, May 2) Brunch concerts by acclaimed pianist.
Edwardian Sunset: Britain from 1901-1914 (January 23) All-day seminar.
Historical Films of Roberto Rossellini (series, begins January 11, 7:30 P.M.)
Photographing New York (January 11, 8 P.M.) An evening with Philip Trager.
Post Offices, Train Stations, Public Places: Art of the '30s (January 27, 8 P.M.)

For information and tickets to Division of Performing Arts events, call 357-1500:
Oh Me, Oh My, Oh Youmans (January 14-17) Original show features '20s music.
Smithsonian Chamber Players (January 16, 17, 18; 8 P.M.) Haydn selections.
20th Century Consort (January 17, 7 P.M.)
American Chamber Players and the American Boychoir (January 25, 8 P.M.)
Suarti and Suarni (January 31, 8 P.M.) Dance-drama of Bali.

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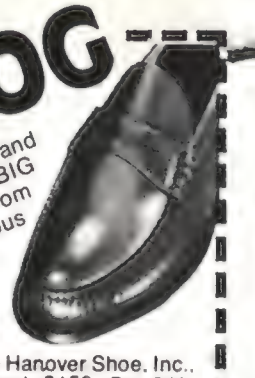

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Smithsonian Institution Traveling Exhibition Service

SITES circulates exhibitions to hundreds of cities outside Washington. To sponsor a show in your community, write to Eileen Harakal, SITES, Smithsonian Institution, Washington, D.C. 20560. Here are some January exhibits:

Tempe, Arizona (January 2-January 31) *The Shopping Bag: Portable Graphic Art,* Arizona State University.

Danbury, Connecticut (January 2-31) *Black American Landmarks,* Danbury Scott Faton Museum.

Gainesville, Florida (January 9-February 7) *John Sloan in Santa Fe,* (January 23-March 7) *Paintings of the Figure from the National Academy of Design,* Santa Fe Community College Art Gallery.

Atlanta (January 1-February 14) *Innovative Furniture in America,* High Museum of Art.

Baltimore (January 23-February 21) *Artists and Space Flight,* Maryland Academy of Sciences.

Canton, Missouri (January 8-February 8) *Contemporary Czechoslovakian Printmakers,* Culver Stockton College.

Oxford, Ohio (January 16-February 14) *Cut on Wood,* Miami University.

Beaumont, Texas (January 2-31) *The Photographer's Hand,* Beaumont Art Museum.

Dallas (January 9-March 28) *Visionary Drawings: Architecture and Planning,* Dallas Historical Society.

Membership benefits

Most Smithsonian museums are open daily, including New Year's Day, from 10 A.M. to 5:30 P.M. Begin your visit at the Associates Reception Desk, open 10 A.M.-4 P.M. in the castle, where top-priority attention is given to members, including special printed materials and details on benefits—discounts in museum shops, dining in The Court, relaxing in the Lounge and the slide-lecture orientation to the 13 Smithsonian museums.

For a free previsit information packet, send postcard request to Associates Reception Center, Smithsonian, Washington, D.C. 20560, or phone 202-357-2700 (or, for hearing impaired, TDD 202-357-1729). Allow two weeks for receipt.

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HEART OF MY HEART
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FOR ALL WE KNOW
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African sculpture and afterlife

Buried with the dead are neckrests such as this one from Tellem culture, Mali.

African funerary rites are a kind of celebration, a recognition of the merits of the deceased and a ritualistic boost into the next stage of life. As John E. Reinhardt, acting director of the National Museum of African Art, explains it, "Westerners have come increasingly to doubt a future existence, but for Africans the future is now. It is as if they coined the very term and concept of afterlife—not the faith-inspired celestial, immortal, interplanetary abode following death; but instead a continuing cycle of life, which is routinely interrupted by death, only to be again restored to a terrestrial existence. . . . For Africans, life is afterlife."

Hence the title of the new NMAfA exhibit, "Life . . . Afterlife: African Funerary Sculpture," which runs through March 1. On view are figures, headrests, masks and grave gifts crafted by artists from the sub-Saharan regions of the continent. Also included are photos, textiles, music and displays about the traditional methods of determining cause of death.

In Africa, traditional art is basically utilitarian, with much of the finest work being associated with death. Just as our memories are stirred by the Lincoln Memorial or a portrait of Mother over the mantel, African funerary sculptures honor and preserve the memory of the deceased. But they also represent the continuum of life through afterlife. Images are placed near or at burial sites, in compounds, or perhaps in special shrines within private homes so, as Reinhardt puts it, the person "never quite leaves." Some memorial images are objects previously used by the deceased. Best known are the stools of the Baule, Agni and Ashanti people of Ivory Coast and Ghana. When an important person dies, his stool is turned on its side and blackened with soot. Other memorial items are weapons (for men) and pots (for women). Memorial figures are cared for with sacrifices—mainly food—and prayer, and serve as a connecting link to the deceased in the next stage of life.

Carol Simons

Calm, contained expression is exhibited by this Agni figure from Ivory Coast.

From a shrine comes this wood and metal figure by the Kota of Gabon.

Bangwa night mask of wood is type worn during complex, elaborate funerals.

Senufo display figures stand near the bier and "guard" the deceased.

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Everglades March 6-13: Explore a subtropical wilderness best known for its abundance and variety of birdlife and home to deer, otter and alligator. Activities include canoe trips and visit to Corkscrew Swamp Sanctuary.

Washington, D.C.: Power and Style March 30-April 4: Discover the fascinating events that shaped our nation's capital. Spend a day in Congress; visit charming neighborhoods and historic memorials during cherry-blossom season.

Savannah/Charleston April 12-19: Experience the gracious living of the past with visits to historic homes and plantations.

Sea of Cortez April 23-May 1: Adventure cruise off Baja Mexico exploring the rich variety of plants and migratory seabirds on the Midriff Islands, and observing finback whales, porpoises and dolphins.

Asheville May 20-24: Visit Biltmore and other historic homes—plus the World's Fair in Knoxville.

Bryce, Zion and the Grand Canyon June 2-10 or September 8-16: Hike spectacular trails while learning about the geology, wildlife and flora of these national parks.

Alaska June 18-July 2: Traveling by air, boat and train, explore the glaciers and fjords from Seattle to White Horse; then spend six days at Camp Denali in Denali National Park (formerly Mt. McKinley).

Toronto June 21-27: Special program of museum lectures and walking tours to experience the exciting diversity of this city's architecture. Also visit Stratford Shakespeare Festival and Niagara Falls.

Family Sampler June 23-27: Special program for parents and children (ages 7-14) to enjoy behind-the-scenes activities at Smithsonian museums and the zoo.

Coming in June . . . Boston: Discover landmarks, museums and neighborhoods.

Washington "Anytime" Weekend: Brighten your winter with an economical weekend visit to your choice of Smithsonian museums. Come any weekend for two or more nights at Loew's L'Enfant Plaza or Hyatt Regency Washington. Package includes hotel, meals, sightseeing and exclusive tour of Smithsonian castle. Reservation and payment at least ten days prior to arrival.

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These tours range in size from small group experiences to charter adventures and vary in price from low cost to deluxe, depending on the type of travel, destination visited and length of trip:

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Panama and the Spanish Main January 8-16: Experience the thrill of traveling from the Pacific to the Atlantic through the Panama Canal.

Kenya January 28-February 14: Wildlife is observed in old safari tradition.

Tall Ship Adventure February 12-21: Set sail on the luxurious 317-foot, four-masted sailing yacht *Sea Cloud* from Antigua to the Grenadines.

Zapotec and Mayan Mexico February 24-March 8 or March 17-29: The richness and diversity of native cultures (past and present) are studied with visits to Oaxaca, San Cristóbal de las Casas and the Yucatán.

Red Sea Passage February 25-March 7: Sail from Suez on the *Argonaut*, visit Karnak, Luxor, Valley of the Kings, Abu Simbel in Egypt and Petra in Jordan.

Morocco March 5-20: Exotic Fez, Marrakesh and Rabat, colorful and tempting markets in ancient medinas, the powerful and lonely beauty of desert and mountain provide an exciting learning experience.

Australia March 19-April 6: Discover the dynamic breadth of "Down Under": Melbourne, cosmopolitan Sydney, tropical Cairns and the Great Barrier Reef, Ayres Rock and the heart of the Outback. Includes dinner and a performance at Sydney's famed Opera House.

Ecuador and the Galápagos Islands April 4-15: Visit Quito, then travel by train to Guayaquil to board the *Buccaneer* for a seven-day voyage. Study the rich plant, bird and animal life; meet scientists at the Charles Darwin Research Station.

Canals and Old Masters April 15-28: Art museums, historic sites and spring flowers highlight visits to Brussels, Antwerp and Ghent. From Bruges, sail on rivers of Belgium and Holland, ending with four colorful days in Amsterdam.

Crete and Rhodes May 3-17: Complex Minoan palaces, Byzantine frescoes, the medieval walled city of Rhodes and the superb acropolis of Lindos are surrounded by the sparkling beauty of these Aegean islands.

London May 9-23: A full program of special lectures, walking tours, theater, excursions and a five-day travel seminar into the English countryside.

History and Romance of the Rhine—from the Alps to the Sea May 17-June 1: Following a program in Zurich and Basel, embark on our chartered ship for a seven-day study voyage to the great castles and cathedrals on the Rhine. Guest lecturers will interpret the splendors of Strassburg, Heidelberg, Cologne and Amsterdam.

Yugoslavia May 21-June 5: From Dubrovnik, the remote southeastern region affords a rare opportunity to visit a rich variety of landscapes and monuments.

Wild Highlands of Scotland May 27-June 12: Mountains, lochs, crofters, eagles and moors; study natural history in a castle near ancient Caledonian forests.

Alpine Countryside May 29-June 13 or September 11-26: Study folk culture, architecture, music, history and geology in a charming Austrian mountain village.

Cotswold Countryside June 27-July 11 or July 11-25: Stay in Cirencester, in the midst of England's ancient green hills. Visit archaeological sites, market towns, woolen mills, museums and private homes. Travel to Oxford, Stratford, Bath.

Adriatic Shores August 28-September 9: MTS *Argonaut* cruise with experts to study the rich history and cultural heritage in Italy and Yugoslavia including Urbino, Ravenna, Venice, Zadar and Dubrovnik.

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in Washington

Selected Studies Seminars

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Post-Impressionist Masters March 7-12: Bill Kloss explores the outstanding paintings of artists such as Gauguin, van Gogh and Cézanne in lavishly illustrated lectures and tours of great museums.

Genealogical Research March 14-19 or March 21-26: Taught by Milton Rubincam, Marilyn Duncan and other leading authorities, participants learn how to conduct research in major genealogical repositories such as the National Archives, Library of Congress and DAR Library.

Religions of the Far East March 28-April 2: The great traditions and practices of Buddhism, Confucianism, Taoism, Shinto and Zen, which have inspired and motivated the greatest minds of Asia for more than 2,000 years.

American Painting in the 19th Century March 28-April 2: The great artistic achievements of renowned masters such as Copley, Cole, Church, Homer, Ryder and Eakins. Includes tours of the Capitol and National Gallery of Art.

Chinese Ceramics April 18-23: Connoisseurship of the timeless beauty and outstanding craftsmanship of famous masterpieces. Highlights exquisite export wares, enameled porcelains, recent discoveries, dating controversies, detection of fakes and the market today.

Quilting: Traditional to Modern April 25-30: Talented author and designer Jinny Beyer shares secrets of success in drafting, fabric and color coordination in lecture/workshops and tours of the outstanding collections of the Smithsonian and DAR.

In Tucson, Arizona

The New Astronomies May 9-14: Springtime in Arizona at two of the most advanced scientific research facilities in the world, the Fred Lawrence Whipple Observatory (formerly Mt. Hopkins) and Kitt Peak National Observatory, with lectures and tours by their directors and eminent staffs.

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By Charles R. Larson

So many books to read —or just toss out

The other day one of my friends returned a book he had borrowed several months earlier.

"What'd you think of it?" I asked him.

"I didn't have the time to read it, but I thought I shouldn't keep it any longer in case you wanted to read it again."

Now there's a considerate fellow. Most of the time when I lend out a book, I know that I'm kissing it goodbye.

"You could have kept it a little longer," I told him. "I'm not scheduled to reread that book until after 2003."

"2003?"

"That's the year I retire."

The way things are going—the way the books accumulate in our household—I'll be lucky to reread it even then. Nevertheless, I keep hoarding books, stashing them away somewhere, thinking that I'll be able to reread them once I've retired.

The year 2003 got me thinking. One of my undergraduates remarked this past year, as he was about to receive his degree, that he'd read some statistics showing that if he were to read a book a week for the rest of his life, he'd still only be able to read 2,600 volumes. That was based upon an average life-span of 50 years after graduation from the university at, say, age 21. He doubted if he'd be able to read a book a week for the rest of his life or even anything near that. What seemed to bother him was the probability that it might be something closer to a book a month for those 50 years—or, thus, a grand total of 600 works.

I can think of 600 books that I'd like to read right away and presume I've considerably fewer years to live than my graduating senior. My remaining book years are limited to something fewer than 30, given the actuarial expectations for the year when I was born. It's not a very pleasant thought. Even though I manage to read between 75 and 100 books a year, that still leaves me with a maximum of 3,000 titles to go.

When I think about all the new books published each year (nearly 40,000 titles in this country alone), I get depressed. There are easily 100 new titles I feel compelled to read each year, though, of course, I never read them all. Each time I start a lengthy tome, my wife reminds me, "But you haven't even read *War and Peace*." That's true. Nor will I ever be able to at the rate I'm going. Older works, especially the classics, always suffer because there's something more recent I feel urged to read.

Unfortunately, space further contributes to the problem, the never-ending avalanche of books. As a teacher and a writer, I regard books as an occupational necessity, though at times I think of them (at least their physical presence and their ubiquitousness) as a professional handicap—the flotsam and jetsam of my work. They're piled up in my study—not just on the desk, but on an extra chair and all over the couch, so cluttered I haven't been able to lie down on it for years. The closet holds a few hundred more. That plus the six bookcases in the room itself.

I suspect my problem isn't much different from other hoarders of the printed word. All I have to do is remember those hundreds of copies of *National Geographic* shelved to overflowing in the family room when I grew up—rarely ever looked at once they were added to the precarious stacks. I've got a friend in the country who saves *every* magazine to which he subscribes. His wife's afraid the attic is going to come crashing down on them one of these days. I've read about little old ladies who never throw out a newspaper. And about people who save their junk mail.

Most people, I suppose, have something to which they cling. Freud, I'm certain, would have been able to draw some interesting conclusions about my bibliomania. I've convinced myself that I save books because they're necessary for my profession. Yet I've also saved copies of all of the drafts of the books I've ever published (plus those that haven't seen print).

I wonder about people in other professions. Do architects save blueprints of everything they've ever designed? Do dentists save duplicate impressions from dentures? Do lawyers save old torts?

Thinking about those 3,000 titles I still hope to read in my lifetime, I'm quite sobered. Three thousand titles sounds like nothing, a mere inkblot on the edge of time. But what if I can't keep up that pace? What if my eyesight gets worse? Perhaps my wife is right. I ought to choose my titles more carefully. I ought to read *War and Peace* before I retire. Maybe I ought to insist that people who borrow my books never return them.

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